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The Evolution of Dividend Policy in the Corporation and in Academic Theory.

Bob G. Wood Jr

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**The evolution of dividend policy in the corporation and in
academic theory**

Wood, Bob G., Jr., Ph.D.

The Louisiana State University and Agricultural and Mechanical Col., 1994

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**THE EVOLUTION OF DIVIDEND POLICY IN THE
CORPORATION AND IN ACADEMIC THEORY**

A Dissertation

Submitted to the Graduate Faculty of the
Louisiana State University and
Agricultural and Mechanical College
in partial fulfillment of the
requirements for the degree of
Doctor of Philosophy

in

The Interdepartmental Programs in Business Administration

by
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May 1994

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TABLE OF CONTENTS

	Page
ACKNOWLEDGEMENTS	iii
LIST OF TABLES	vi
ABSTRACT	ix
CHAPTER 1: INTRODUCTION	1
CHAPTER 2: THE HISTORICAL EVOLUTION OF CORPORATE DIVIDEND POLICY	5
2.1 Introduction	5
2.2 Early Joint Stock Companies: Origins to 1720	6
2.3 Joint Stock Companies After the Bubble Act and the First U.S. Corporations: 1720 to 1800	18
2.4 The Rise of the Railroads and Preferred Stock: 1800-1865	24
2.5 The Rise of the Industrial Corporation: 1865-1920	33
2.6 The Roaring Twenties and the Great Crash: 1920-1929	44
2.7 Modern Dividend History: 1930 to the Present	51
2.8 Summary	54
CHAPTER 3: THE EVOLUTION OF DIVIDEND POLICY THEORIES	58
3.1 Introduction and Initial Research	58
3.2 Theoretical Explanations Under Full Information	64
3.3 Theoretical Explanations Based on Informational Asymmetries	84
3.4 Behavioral Models	116
3.5 Analysis of the Empirical Tests of Corporate Dividend Theory	123
3.6 Summary and Conclusions	131

CHAPTER 4: EXECUTIVE COMPENSATION, DIVIDEND POLICY AND CAPITAL STRUCTURE	135
4.1 Introduction	135
4.2 Literature Review	136
4.3 Executive Compensation ,Dividends and Debt	148
4.4 Data, Policy Variables and Method of Analysis	153
4.5 Empirical Results	160
4.6 Summary and Conclusions	167
 CHAPTER 5: SUMMARY, CONCLUSIONS AND FUTURE RESEARCH	 169
 REFERENCES	 174
 APPENDIX A: METHOD OF ANALYSIS ABBREVIATIONS	 206
 APPENDIX B: CATEGORICAL VARIABLE ANALYSIS METHOD OF ANALYSIS	 208
 APPENDIX C: CATEGORICAL VARIABLE ANALYSIS METHOD OF ANALYSIS RESULTS	 211
 VITA	 214

LIST OF TABLES

Table	Page
2.1 Trading Price Range, Cash Dividends and Stock Dividends of the British East India Company: 1662-1720	14
2.2 U.S. Bank Stock Dividends by Year: 1785-1800	21
2.3 Dividend Income on Common Stocks by Year: 1871-1919	39
2.4 Dividend Income on Common Stocks by Year: 1920-1929	48
2.5 Dividend Payout Ratio by Industry: 1920 and 1929	49
2.6 New Equity Issues by Year: 1919-1929	50
2.7 Dividend Payout Ratio by Industry: 1947, 1960 and 1920-1960	53
2.8 Dividend Income on Common Stocks by Year: 1930-1991	55
3.1 Empirical Studies of the Miller and Modigliani (1961) Dividend Irrelevance Proposition	62
3.2 Empirical Studies Pricing the Tax on Dividends by Adding a Variable to the Capital Asset Pricing Model	69
3.3 Empirical Studies of Changes in Price During the Period Surrounding Ex-Dividend Days	74
3.4 Empirical Studies of Changes in the Tax Liability of Dividends	79
3.5 Early Empirical Tests of the Information Content of Dividends Hypothesis	87
3.6 Empirical Tests Supporting the Information Content of Dividends Hypothesis	97

Table	Page
3.7 Empirical Tests Not Supportive of the Information Content of Dividends Hypothesis and Signaling Models	106
3.8 Empirical Tests of Agency Cost Theory	112
3.9 Empirical Tests of the Signaling Versus Free Cash Flow Hypothesis	115
3.10 The Categorical Data Analysis Method of Analysis Classification Framework	127
3.11 Categorical Variable Analysis Population Profiles of Empirical Analyses of Corporate Dividend Policy	128
3.12 Analysis of Weighted Least Squares Estimates Obtained from Categorical Variable Analysis of Empirical Analyses of Corporate Dividend Policy	128
3.13 Categorical Variable Analysis Population Profiles of Empirical Analyses of the Information Content of Dividend Hypothesis	129
3.14 Analysis of Weighted Least Squares Estimates Obtained from Categorical Variable Analysis of Empirical Analyses of the Information Content of Dividend Hypothesis	130
4.1 Empirical Studies Relating Executive Compensation to Firm Size	140
4.2 Empirical Studies Relating Executive Compensation to Firm Share Price and Corporate Profits	142
4.3 Empirical Studies Relating Executive Compensation to Multiple Factors	145
4.4 Empirical Studies Demonstrating the Effects of Executive Incentive Plan Adoption on Financial Measures and Operational Strategies	149

Table	Page
4.5 Summary Statistics of Compensation, Financial and Capital Structure Variables	162
4.6 Correlation Coefficients Among Compensation, Financial and Capital Structure Variables	164
4.7 Three Stage Least Squares Estimates of Financial and Capital Structure Variables on Executive Compensation, Dividend and Capital Structure	166
C1 Analysis of Weighted Least Squares Estimates Obtained from Categorical Variable Analysis of Empirical Analyses of Corporate Dividend Policy (Explanatory Variable: Method of Analysis)	211
C2 Analysis of Weighted Least Squares Estimates Obtained from Categorical Variable Analysis of Empirical Analyses of Corporate Dividend Policy (Explanatory Variable: Data Type)	212
C3 Analysis of Weighted Least Squares Estimates Obtained from Categorical Variable Analysis of Empirical Analyses of Corporate Dividend Policy (Explanatory Variable: Study Midpoint)	212
C4 Analysis of Weighted Least Squares Estimates Obtained from Categorical Variable Analysis of Empirical Analyses of Corporate Dividend Policy (Explanatory Variable: Publication Outlet)	213

ABSTRACT

"The harder we look at the dividend picture, the more it seems like a puzzle with pieces that just don't fit together" (Black, 1976). The purpose of this study is to examine the dividend phenomenon.

The first essay of the dissertation investigates the origins, modifications and adaptations of corporate dividend payments to shareholders. Contemporary theoretical modeling to date has neglected to acknowledge the potential influence of dividend payment tradition in the formulation of dividend policy.

The second essay examines the evolution of the theoretical attempts to explain dividend policy and empirical tests of these theories. The dividend paradigms are divided into models formulated in states with full information, models developed in states of informational asymmetries and models using behavioral rationales as the basis for their development. The second essay concludes with an analysis to determine if method of analysis, frequency of sampling observation or sample period influence the often contradictory results of the analyses.

The dissertation's third essay explores the executive compensation, dividend policy and capital structure determination process. This essay extends existing research on the policies in two ways. Firm level data is used here; many of the earlier works use industry data. The study also seeks to determine if the policy choice interactions implied by earlier work can be demonstrated using a system of equations.

CHAPTER 1

INTRODUCTION

"The harder we look at the dividend picture, the more it seems like a puzzle with pieces that just don't fit together" (Black, 1976). Although corporate dividend policy has been analyzed by financial economists for over a century and intensely studied for the last four decades, the theoretical models developed thus far are incapable of adequately explaining the continued existence of the phenomenon. The payment of dividends is not in the economic best interests of the shareholder, even in the absence of personal and corporate taxes. Despite this apparent economic absurdity, generous dividends continue to be paid by corporations and the dividend decision remains a major component of the corporate financial agenda. The purpose of this study is threefold; (1) to examine the historical evolution of dividend policy and determine if the evolutionary process can help explain the persistence of this practice, (2) to review comprehensively the theoretical modeling of dividend policy by financial economists and the empirical tests of the theories and (3) to examine the executive compensation, dividend policy and capital structure determination process and analyze the nature and significance of the associations between these three policy variables.

The first essay of the dissertation investigates the historical evolution of corporate dividend payments to shareholders. The literature lacks an extant examination of the origins, modifications and adaptations of these distributions over their three centuries of existence. Contemporary theoretical modeling to date has

neglected to acknowledge the potential influence of dividend payment tradition in the formulation of dividend policy.

Joint stock trading companies of the seventeenth and eighteenth centuries made the first dividend payments. These distributions to shareholders were complete disbursements of profits and invested capital and terminated the venture's existence. The payments were soon limited to profits when shareholders and managers realized that maintaining the company as a going concern was more economically efficient. Dividend payments later became and continue today as token offerings of profits and earnings retained in earlier periods that are determined solely at the corporate manager's discretion.

The dissertation's second essay systematically examines the evolution of the theoretical attempts to explain dividend policy and empirical attempts to support these theories. The modern era of theoretical dividend modeling began with the Miller and Modigliani (1961) (M&M) irrelevance declaration. The majority of models developed following the seminal work of M&M rely on market imperfections as their basis for explaining dividend existence.

The dividend paradigms can be divided into models formulated in states with full information, models developed in states of informational asymmetries and models using behavioral rationales as the basis for their development. In the full information setting, theorists add the market imperfection of taxes to the perfect market world of M&M. The signaling, agency costs and free cash flow hypotheses are all based on the assumption that informational asymmetries arising from the separation of corporate

managers and owners precipitate the need for dividend payments to shareholders. Behavioralists model dividends as a function of behavioral and psychological influences.

The second essay concludes with an examination of the empirical tests of corporate dividend policy to determine if method of analysis, frequency of sampling observation, sample period or journal of publication influence the often contradictory results of the analyses. These components are commonly cited by researchers as the cause of the often conflicting findings in tests of theoretical models. Categorical data analysis methodology is employed to describe the structural relation between the explanatory variables and the empirical results. The entire sample of empirical studies and the empirical tests of the information content of dividend hypothesis are analyzed to determine if choice of the method of analysis, data type and sample period influence the results of the studies.

The dissertation's third essay explores executive compensation, dividend and capital structure policy decisions. The informational asymmetries and agency costs resulting from the separation of corporate management and owners can be reduced by the simultaneous optimization of compensation, dividend and capital structure policy choices (Jensen, Solberg and Zorn, 1992, Mehran, 1992 and Smith and Watts, 1992). Compensation contracts can be designed to foster managerial activities that benefit the corporation's owners and managerial activities can be better monitored and excess cash flows reduced by significant dividend and debt interest payments.

This essay extends existing research on the compensation, dividend and debt policy determination process in two ways. This analysis uses firm level data; many of

the earlier works use industry level data. The study also seeks to determine if the policy choice interrelation implied by previous work can be demonstrated using a system of equations.

Chapter 2 traces the historical evolution of corporate dividend policy and the evolution of dividend policy theories is reviewed in Chapter 3. Chapter 4 examines the determinants and interrelations of executive compensation, dividend policy and capital structure policy choices. Chapter 5 has concluding remarks and suggested direction for future research of the dividend puzzle.

CHAPTER 2

THE HISTORICAL EVOLUTION OF CORPORATE DIVIDEND POLICY

2.1 INTRODUCTION

Corporate dividend payments to shareholders began over three hundred years ago and have continued as an acceptable if not required activity of corporate managers despite their apparent contradictory economic nature. The original payments to joint stock company shareholders in Holland and Great Britain were liquidating distributions of capital and profit that terminated the joint stock enterprise's existence. Later payments were limited to the net profits of the undertakings that permitted more efficient use of investment capital and gave the companies perpetual existence. More recently, the payments have become symbolic liquidations solely determined by managers; dividends are paid to shareholders from a combination of profits from the current period and earnings retained in previous profitable periods. Although largely symbolic, the continued importance of a consistent and significant dividend payment to maintain shareholder contentment remains a managerial priority. The purpose of this chapter is to trace the historical evolution of corporate dividend policy.

Section 2.2 examines the early history of joint stock companies in Holland and Great Britain and the origins of dividend payments and policies. Section 2.3 explores the development of joint stock companies in Great Britain following the Bubble Act of 1720 and the dawn of corporate activity in the United States. Section 2.4 looks at the rise of railroad corporations and the origins of preferred stock issues. Section 2.5

examines the rise of the industrial corporation in the United States following the Civil War. Section 2.6 analyses the meteoric rise of equities in the third decade of the twentieth century and the subsequent crash while Section 2.7 investigates corporate dividend policy over the past 50 years. The chapter closes with a brief summary.

2.2 EARLY JOINT STOCK COMPANIES: ORIGINS TO 1720

2.2.1 The Origin of the Modern Corporation

The embryonic origin of the corporation--groups united for a common purpose--can be traced to Greek and Roman times (Williston, 1888a). Precursors of the modern corporation were found in Italy where merchants of the fourteenth century formed loose federations for limited purposes (Scott, 1912). Cooperatives of merchants and traders appeared in Denmark at approximately the same time (Kindleberger, 1984). These coalitions became more specialized during the next two centuries (Scott, 1912).

In the first fifty years of the sixteenth century, successful sailing captains began selling "ventures on parts" in their voyages to investors. Parts were bought and sold in the open market; by the end of the sixteenth century, these parts were replaced by fixed denomination shares (Masselman, 1963). The most common denomination of the shares was 1/32 of the ship's property but interests of 1/8, 1/16, 1/48, and 1/56 were not uncommon. Investors regularly purchased shares from more than one captain to diversify their risk of loss from the misfortunes common to sailing ventures of the period (Barbour, 1929).

Joint stock companies evolved from these merchant associations due to the high capital requirements of foreign trade (Kindleberger, 1984). Investors (shareholders)

provided capital for these corporations while sailing captains (managers) used their special skills to employ the assets profitably and pay dividends to the shareholders (Warren, 1923). The first joint stock company organized in Great Britain was the Eastland Trading Company, originally chartered in the fifteenth century and granted monopoly trading rights to the Baltic countries. This enterprise was followed in the sixteenth century by the Muscovy Company and the Levant Company, chartered for trading with Russia and with Turkey respectively (Scott, 1912). The charters granted to joint stock companies were not perpetual--rather the licenses were granted for definite and limited periods to allow the government to alter the provisions of the charter and collect additional fees and taxes (Kindleberger, 1984). Without exception, these trading companies produced significant profits for their owners (Scott, 1912).

2.2.2 Joint Stock Companies in Holland

The Dutch East India Company was formed in Holland in 1602 and granted a monopoly for trading with India (Van Loon, 1913). This enterprise was the first permanently organized joint stock company (Kindleberger, 1984). Shares of the venture began trading in Amsterdam almost immediately after the original stock subscription was completed.

More than half of the original capital for the venture was raised from the merchants of Amsterdam. In the early years of the company, the organization paid 75 percent dividends; the high dividend level was largely the result of reckless abuse of the new trading territories. During its first fifteen years, the company's dividends averaged 25 percent (Scott, 1912).

The market for exchange of shares was held out-of-doors in Holland until a building was erected for this purpose in Amsterdam in 1613. Demand for the shares was stimulated by the expectation of high profits from the company's endeavors and the desire to participate in those profits by individuals excluded from the original share subscription. The demand for the shares by individuals and non-member merchants quickly increased the price of the shares by 15 percent (Ehrenberg, 1963).

Circulation of news of the venture from correspondents across the globe and rumors of its successes and failures increased speculation in the shares. Professional traders also used eavesdroppers and spies to glean private information. Rumors were often started depending solely on a trader's current position (Schama, 1987). Orders for the sale of a large number of shares entered by professional traders led to an flood of sale orders by frightened amateur investors to sell their shares and a drop in share price. The professional would profit by repurchasing the shares at a lower price (Allen and Gale, 1992). Trading was primarily in futures and liberal settlement dates increased share volume and volatility (Ehrenberg, 1963). The line between casual wagering and organized stock trading was often blurred. Speculators traded in hope of earning profits from the short term price fluctuations rather than from the profits arising from successful completion of the voyages (Schama, 1987).

The company monopolized the spice trade in Holland. In 1632, seven ships returned from India laden with spices. The cargo was sold at five times the venture's cost. In 1661, goods were sold at twice their cost to the company. In 1672, the company's worst year during the 17th century, cargos worth in excess of 40,000,000

guilders were brought to the republic. The average gain to the company per pound of spice was 1200 percent (Van Loon, 1913).

Merchant ships of the period were often accompanied on their expeditions by armed men-of-war. Although the practice originated during the middle ages, the foremost use of the convention was with the organized trade of the Dutch East India Company. The lack of competition among the ships of the venture and the common ownership of the vessels precluded the fear of the loss of monopoly rents common to single ship endeavors of the period (Barbour, 1929).

The Dutch East India Company was not managed by a single individual; rather, the company was divided into four chambers, each representing a fixed number of shares that had been purchased by investors from a distinct geographical area. Inhabitants of other provinces could hold stock individually but had no influence on managerial policy. Each chamber sent ships in proportion to their ownership of the company; the ships and all potential profits from those ships remained the sole property of that chamber. The company had a general board of directors with 46 members but immediate power was centered in a 17 member Board of Governors.

Minority stockholders holding less than five shares had no voice in the company's operations--these investors were allowed only to accept their dividends from the directors and express their profound gratitude for such excellent management. No shareholder meetings were held, no annual nor quarterly reports were issued, nor were Board of Governor meeting minutes kept. The high level of dividends quieted any potential investor anxieties. Financial juggling by managers kept dividend payments

high throughout the seventeenth century. A share purchased at the time of original subscription produced dividends exceeding 35 times the initial purchase price during the company's first eighty years of business. During the 180 years of the company's existence, dividend payments averaged 21 percent annually.

The Dutch West India Company was founded in 1621 but, unlike the Dutch East India Company, it was not granted a strict trading monopoly. Shareholders had a more direct influence in the company's operations. The 74-member board of directors was chosen from all owners possessing at least two shares of stock. A committee of 19 directors was given direct managerial control. The company's trade areas included the west coast of Africa, the east coast of America, and all islands between and south of the two coasts. The Dutch West India Company was unsuccessful from its inception due to competition and other exogenous factors (Van Loon, 1913).

2.2.3 Joint Stock Companies in Great Britain

The most important joint stock venture in Great Britain was the British East India Company, formed in 1599 as a spinoff of the Levant Company. The British East India Company was granted a charter and monopoly trading rights by Act of Parliament in 1600 (Baskin, 1988). The first agreement between a loosely organized group of merchants was for one voyage; proceeds from the sale of cargo and company assets were divided among the shareholders at the end of the voyage proportionate to their ownership (Kindleberger, 1984). The assets of the venture were liquidated at the conclusion of each voyage to prevent fraudulent practices and to insure that proper division of proceeds to shareholders was accomplished (Baskin, 1988).

The limited number of original shares were primarily sold among acquaintances. Shareholders had unlimited liability and were subject to calls for additional funds if needed. Management and ownership were completely independent with managers chosen according to their ability and knowledge of the venture rather than their proportion of ownership in the company (Baskin, 1988). A governor, deputy governor, and 24 committees made up the management structure (Scott, 1912). The ownership of shares was transferrable through sale of the shares but it was understood that any change of ownership would be limited to individuals known by the other stockholders (Baskin, 1988). Between 1609 and 1613, distributions of profit and principal from voyages totaled between 120 and 240 percent (Scott, 1912); a significant portion was paid in articles acquired during the expeditions. These divisions of principal and profits closely resembled liquidating dividends (Preinreich, 1978).

The first joint stock shares of the British East India Company were issued in 1613 with the cost of the shares to be paid over a four-year period. For record keeping convenience, each share had an equal and definite value (Williston, 1888b). Four voyages were scheduled with separate capital raised for each expedition through the installment payments required by the purchase of stock. Divisions from the company averaged 31 percent of share purchase price per year from its inception through 1617 (Scott, 1912) and totaled over 150 percent for the first five years after the initial joint stock sale (Baskin, 1988).

By 1617, the company had 934 shareholders and 36 ships; seven additional voyages were scheduled. Not all voyages were profitable due to the high risk and

uncertainty associated with sea voyages (Kindleberger, 1984); depressed economic conditions in Great Britain and an outbreak of plague in London contributed to the loss of profitability (Scott, 1912). The shares sold more than 30 percent below the original offering price from 1617-1634 due to the company's poor performance (Ehrenberg, 1963).

The minimum investment allowed in the company had increased to £100 by 1657 (Scott, 1912). Voting rights required an investment of at least £500 with smaller investors being allowed to pool their holdings to reach voting status. An investment of £1000 was required for committee membership (Williston, 1888b). An independent appraisal of company assets was scheduled in 1664 with subsequent appraisals to occur at three-year intervals. Following each appraisal, shareholders were allowed to exchange their proportion of ownership for cash and their shares were sold to a new investor. New stockholders were also required to pay an admission fee to the company in addition to the share purchase price.

Liquidation of assets at the end of each voyage proved to be inefficient since a portion of the proceeds were invariably paid in the form of commodities acquired on the voyage. The success of the company and the subsequent confidence of the shareholders in the corporation's managers led to a belief among shareholders that accountability could be accomplished exclusively through the payment of generous dividends (Baskin, 1988). This fundamental right of the shareholder to receive dividends was recognized from the initial joint stock offerings (Williston, 1888b). A 20 percent dividend paid exclusively from profits was declared in 1661 and paid in

1662. Once begun, the practice of paying dividends solely from profits continued; a dividend of 20 percent was paid again in 1663 and 1664. The 1664 appraisal conducted after dividend payment showed a 30 percent undistributed capital gain. The 40 percent dividend declared in 1665 included the undistributed capital gain of 30 percent and an additional 10 percent dividend from profits (Scott, 1912).

The trading price of the shares varied independently of the level of dividends during this period. Despite the large dividends paid between 1665 and 1667, the shares routinely sold below par. Between 1668 and 1670, when no dividend was paid, the stock price traded above par. The turnover of shares was small during the period despite the well distributed ownership; the largest holding in the company at the time was less than one percent of the total outstanding stock. This pattern was indicative of a general shareholder confidence in the firm's managers.

Dividends from 1671 through 1677 totaled 130 percent. In 1677, the stock price reached £245; a dividend of 40 percent was paid in 1678. In addition, a distribution of one-half percent was made in damaged calico. Between 1675 and 1681, dividends averaged greater than 20 percent each year with total dividends for the period totalling more than 150 percent (Scott, 1912); the stock at the same time traded between £300 and £500 (Ehrenberg, 1963). Although impressive, these returns were not exorbitant when compared with other joint stock company dividends of the period (Scott, 1912). The 1678 appraisal value of the company exceeded £1,750,000 with more than £1,000,000 in undistributed profits. Beginning in 1681, the corporate directors instituted an annual gift to the King from corporate profits.

Table 2.1 shows the trading price, cash dividends and stock dividends of the British East India Company between 1662 and 1720. The highest dividend paid in any single year was 50 percent that was paid in 1680, 1682, 1689 and 1691. The British East India Company failed to pay dividends for eight consecutive years beginning in 1692. The price of the stock showed considerable volatility during the period, trading from £60 to £900 per share (Scott, 1912).

TABLE 2.1

**TRADING PRICE RANGE, CASH DIVIDENDS AND STOCK DIVIDENDS OF
THE BRITISH EAST INDIA COMPANY¹**

1662-1720

Year	Trading Price Range	Cash Dividend (Percent)	Stock Dividend (Percent)
1662-1667	60-80	150	
1668-1674	80-130	90	
1675-1682	130-520	200	100
1683-1691	150-500	200	
1692-1699	60-316	0	
1700-1708	116-278	66	
1709-1720	208-898	100	

¹ From Scott, William Robert, 1912, *The Constitution and Finance of English, Scottish, and Irish Joint Stock Companies to 1720*, Cambridge: Cambridge University Press.

The British East India Company also employed men-of-war to protect their vessels. Private marine insurers began to provide insurance against the loss of ships involved in the expeditions. Insurance providers were more successful and reputable

in Holland and many British ships were insured by Dutch companies despite the higher premiums charged by these firms. Premiums were highly volatile, varying from 3 to 4 percent in peacetime to over 15 percent in time of war (Barbour, 1929).

The success of the early trading companies increased the public's interest and acceptance of joint stock ventures during the seventeenth century (Baskin, 1988). Although stock and share dealing was largely unorganized before 1680, by the middle of the next decade a highly developed securities market had evolved (Morgan and Thomas, 1969). London coffee shops served as the first venues of security trading. Corporate activity climaxed between 1690 and 1720 (Baskin, 1988). Before 1691, only three joint stock companies existed and all of these were trading companies--the East India Company, the Royal African Company and the Hudson's Bay Company (Williston, 1888a). Increases in trade and the subsequent improvement in the general economic conditions precipitated the formation and issuance of stock by 100 new companies between 1691 and 1695 (Kindleberger, 1984). These issues included mining, banking, clothing and utility companies (Ehrenberg, 1963). The lack of cash dividend payments by the East India Company during the period did not discourage potential investors from purchasing the shares of the joint stock companies (Scott, 1912). Speculation in joint stock issues increased to frenzied levels and share prices, new issues and volatility rose to unprecedented levels (Baskin, 1988). The East India Company resumed cash dividends in 1700 and the stock price increased eight-fold over the next two decades (Scott, 1912). The total capitalization of joint stock companies reached £21,000,000 by 1717, a fourfold increase in 22 years (Kindleberger, 1978).

New company formation continued at a frantic pace--in the twelve months beginning in September 1719, 195 new companies were formed (Kindleberger, 1984).

Trading and speculating in new and established issues continued to accelerate. This rampant growth was further fueled by allowing investors to purchase shares for only 5-10 percent of their market price; shareholders were subject to future calls for the balance owed on the shares. The low down payment was justified by the belief that a new company's need for funds was a gradual process and that regular infusions of capital from the shareholder payments would increase the safety of the firm's creditors (Scott, 1912).

The South Sea Company was granted a charter in 1711 for the purpose of consolidating the national debt of Great Britain and replacing the debt with corporate stock. Secondary issues provided funds for the company to pay exorbitant dividends to original issue shareholders. Other fraudulent practices including income and dividend manipulations were also common. The South Sea Company's stock price increased ten-fold before its inevitable collapse (Kindleberger, 1978). The debacle of the South Sea Company and the subsequent passage of the Bubble Act in 1720 greatly limited the promotion and development of the joint stock companies in Great Britain over the next four decades (Baskin, 1988). The Act made unincorporated joint stock companies illegal and placed severe stipulations on new company formation (Clark, 1929a). Corporations could not be established without an explicit charter from Parliament and the sale of shares was prohibited (Davis, 1917).

2.2.4 Joint Stock Companies in the Colonies and Early Dividend Regulations

The earliest corporations in the American Colonies were public corporations-- cities and towns. Before the end of the seventeenth century, private corporations began to appear. These corporations were modeled after English corporations using English law and with corporate charters granted by the Crown. Private corporations were distinguished from public corporations by their private support and control. The most common type of private corporations of the period were those organized for religious worship. No joint stock business corporations existed in the American colonies before 1720 (Davis, 1917).

The establishment of permanently capitalized joint stock companies produced the first dividend payment regulations. Corporate charters of the late seventeenth century routinely limited dividend payments to profits only. This practice became more commonplace in the eighteenth century (Williston, 1888a).

In 1697, Parliament enacted a statute making the recipients of a dividend paid from capital of the Bank of England liable to bank creditors (Kindleberger, 1984). By 1700, two statutory standards existed--the profit rule and the capital impairment rule. The profit rule's objective was preservation of a minimum asset level to insure repayment of the company's creditor claims. The capital impairment rule developed to ensure a corporation's continued existence. Early law developed solely from corporate charters and actual practice precedents rather than from court decisions (Kehl, 1941).

2.2.5 Summary

Corporate dividends began as divisions of venture capital and profits based on original investor contribution. The widespread success of joint stock endeavors led to the distribution of dividends solely from voyage profits. Company capital remained intact and the enterprise continued as a going concern. Corporate managers rapidly realized the importance of generous dividends for investor satisfaction. The use of profits only to pay dividends and prohibition against capital impairment by excess dividend payments were restrictions imposed on corporate dividend policy within fifty years of the first profit only dividend payments.

2.3 JOINT STOCK COMPANIES AFTER THE BUBBLE ACT AND THE FIRST U. S. CORPORATIONS: 1720 TO 1800

2.3.1 Joint Stock Companies in Holland and Great Britain

The replacement of the able managers of the seventeenth century Dutch East India Company with managers chosen solely on the basis of their family background and social acquaintances severely affected the company's profitability (Van Loon, 1913). During the eighteenth century, the Board of Governors was forced to secretly borrow funds from financial institutions outside of Holland to maintain the level of dividend payments (Kindleberger, 1984). After 1770, credit was maintained with great difficulty; by 1780, the company was practically bankrupt. The company continued to pay dividends providing a "splendid income" to shareholders up to its collapse in 1795 (Van Loon, 1913).

In Great Britain, the passage of the Bubble Act of 1720 by Parliament severely limited the organization of new joint stock companies (Baskin, 1988). The first companies granted charters after the Bubble Act were canal companies. These companies doubled the length of canals in Great Britain between 1730 and 1790 (Kindleberger, 1984). More than 100 of these companies were organized before 1800; 81 began operation between 1791 and 1794 alone (Hunt, 1936). Although speculation in these shares occurred, the level of speculation was mild compared with the railway mania that would transpire fifty years later (Kindleberger, 1984).

2.3.2 Joint Stock Companies in the United States

Business corporations in the colonies before the American Revolution were few in number and of little importance; their structure and organization were not typical of modern firms. The New London Society United for Trade and Commerce, established in 1732, was the first U. S. business corporation. The second was the Union Wharf Company of New Haven organized in 1760. No evidence exists of the payment of dividends by these corporations before 1800; all earnings were used for expansion and maintenance of existing assets.

The Philadelphia Contributionship for the Insuring of Houses from Loss by Fire, the first corporation with modern corporate characteristics, was chartered in Philadelphia in 1768 (Davis, 1917). This company was the only business corporation with a charter predating the Declaration of Independence (Williston, 1888b). A number of whaling, mining and manufacturing corporations were chartered during the 25 years following the American Revolution and many unincorporated companies were founded.

The first true banking corporation, the Bank of North America, was chartered in 1781 in Philadelphia with local citizens purchasing the majority of the shares (Williston, 1888b). The company was highly profitable from its beginning and paid a 4.5 percent dividend after six months of operation. Dividends of 14.5 percent and 13.5 percent were paid in 1784 and 1785, respectively. Shareholder income from dividends averaged 9.4 percent for the next century. The Bank of New York, another early joint stock company, paid a 3 percent semiannual dividend from 1784-1791. By 1793, over twenty banks were in operation. The shares of these stocks usually sold above par due to their generous and consistent dividend payments. Bank stocks averaged 8.6 percent dividends, usually paid semi-annually, between 1782 and 1800 (Davis, 1917). Table 2.2 shows the dividends paid by banking corporations on common stocks each year between 1785 and 1800.

New issue sales and share trading became commonplace. The most common method of security sale was by public auction. An influx of European funds for investment in U. S. companies and speculation led to four semi-annual upswings in stock prices between 1789-1791. Newspaper quotes of stock prices began to appear in 1786 and became a regular feature of newspapers as early as 1789 (Davis, 1917).

Between 1783 and 1800, 74 charters were granted to corporations to enhance inland navigation. The results of these firms were disproportionate to the efforts. Although the canals offered increased convenience, the companies were unable to pay cash dividends to their investors. Toll bridge and water supply companies of the period also failed to pay significant dividends to their shareholders.

TABLE 2.2
U. S. BANK STOCK DIVIDENDS BY YEAR¹
1785-1800

Bank	1785	1786	1787	1788	1789	1790	1791	1792	1793	1794	1795	1796	1797	1798	1799	1800
North America	6.0	6.0	6.0	6.5	7.0	7.0	13.5	12.5	12.0	12.0	12.0	12.0	12.0	12.0	11.0	10.0
New York	6.0	6.0	6.0	6.5	7.0	7.0	10.5	8.5	9.0	13.5	9.0	9.0	13.5	9.0	9.0	13.5
Massachusetts	2.5	5.0	6.5	7.5	8.5	22.75	19.0	27.33	8.0	8.0	10.5	8.5	9.0	9.0	9.0	9.0
Maryland	--	--	--	--	--	--	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0
United States	--	--	--	--	--	--	--	8.0	7.5	8.0	8.0	8.0	9.0	8.0	8.0	10.0
Providence	--	--	--	--	--	--	--	7.5	7.0	7.0	8.0	8.0	8.0	8.0	10.5	10.0
South Carolina	--	--	--	--	--	--	--	9.0	9.0	15.0	15.0	7.5 ²	# ³	#	#	#
Hartford	--	--	--	--	--	--	--	--	3.5	3.0	0.0	0.0	3.0	3.5	4.0	4.0
Union (Boston)	--	--	--	--	--	--	--	--	8.0	8.0	8.5	10.0	10.0	9.0	9.0	9.0
New Haven	--	--	--	--	--	--	--	--	--	--	--	0.0	8.0	8.25	6.0	6.0
Pennsylvania	--	--	--	--	--	--	--	--	--	--	--	8.0	8.0	10.00	9.5	9.5
Rhode Island	--	--	--	--	--	--	--	--	--	--	--	5.5	8.0	8.0	10.0	10.0

¹ From Davis, Joseph S., 1917, *Essays in the Earlier History of American Corporations*, Cambridge Massachusetts: Harvard University Press.

² For Six Months

³ Not Available

The 33 insurance companies chartered from 1768-1800 were for the most part financially prosperous. Although dividends were paid by these companies to their shareholders, the variance in the amount and the reliability of the dividend payments was much more pronounced than in the dividends received from banking corporations.

Between 1789 and 1800, eight manufacturing firms were chartered. The success of these companies was at best equal to the success of unincorporated manufacturing firms of the period. Shareholders were not rewarded with dividends; all profits were reinvested in the companies to finance growth and expansion (Davis, 1917). By the close of the eighteenth century, 335 American corporations existed, over 90 percent of these were incorporated after 1789 (Kehl, 1941).

Practically no general statutes governing corporations existed before 1800. Corporations and investors relied on English precedents to determine the legality of corporate operations (Davis, 1917). No specific provisions in the charter protected the interests of the company's creditors--these creditors were safeguarded only by existing common law principles (Warren, 1923).

Of paramount importance to American dividend law was the Bank of England charter of 1694. Large sections of the charter were copied verbatim by Alexander Hamilton when writing the Bank of the United States charter. The only significant change in the charter was the assignment of liability for incurred indebtedness due to excess dividend payment. In the original charter, shareholders were liable for the debts; in the U. S. charter, the board of directors were held accountable for the indebtedness. The same policy of board of director liability was followed in subsequent

bank charters in the United States (Kehl, 1941). Although corporate statutes varied from jurisdiction to jurisdiction, the board of director liability held across the United States (Briggs, 1933). Shareholder liability was unlimited (Clark, 1929a).

The 1781 charter of the Bank of North America granted the board of directors the power to regularly pay the proper amount of dividends out of corporate profits. The 1784 charter of the Bank of New York contained a similar clause. The 1790 Bank of the United States charter was the first to specify payment of semi-annual dividends from profits (Davis, 1917).

2.3.3 Summary

The recognition of the importance of a consistent dividend stream led to less than legitimate financial practices by the managers of joint stock companies when corporate profits proved to be insufficient to continue dividend payments at established levels. The passage of the Bubble Act in 1720, largely the result of these fraudulent activities, limited the further development of joint stock companies in Great Britain during the last eighty years of the eighteenth century.

In the United States, the number of both incorporated and unincorporated joint stock companies grew rapidly following the American Revolution. The first banking corporations in the United States began to pay substantial dividends soon after their inception. Other joint stock companies in the United States were less successful in their efforts to pay shareholders generous dividends; some of these corporations used current earnings to fund expansions and other investment opportunities while other ventures

were less than profitable. By the beginning of the nineteenth century, dividends had become symbolic liquidations rather than distributions of net profits.

2.4 THE RISE OF THE RAILROADS AND PREFERRED STOCK: 1800-1865

2.4.1 Corporate Activity in Great Britain

The dawn of the nineteenth century in Great Britain found a renewed investor interest in corporate securities (Kindleberger, 1984). This revival was largely the result of investor perception of railroad and canal corporations as civic improvement companies rather than parsimonious profit seekers. The perceived increase in legitimacy decreased the public's fear of fraudulent activity (Baskin, 1988). Annual dividend payments of 7-12 percent by publicly traded banking firms also boosted investor confidence (Hunt, 1936). A price list of publicly traded securities began to be a regular feature in the newspapers of the era and the number of issue quotes published grew rapidly (Hunt, 1936). Shares of 30 different corporations were available for purchase by investors in 1815 (Conant, 1904).

A boom in English insurance company stocks occurred during the third decade of the nineteenth century; the rapid growth and abundant success of these companies intensified speculation in joint stock companies (Hunt, 1936). At the same time, the market was inundated with new issues; 624 new companies issued stock between 1823 and 1825 (Kindleberger, 1984). Parliament received 250 joint stock company applications for incorporation in April 1824 alone (Hunt, 1936). The financial collapse of 1827 led to the failure of 75 percent of the firms organized between 1823 and 1825; most of the others had failed by 1843 (Baskin, 1988). Joint stock banks generally

emerged from the period unscathed with the majority of the 40 banks organized between 1826 and 1833 remaining profitable and paying dividends of between 7 and 12 percent in 1833. Insurance companies were also generally successful; all but one of the companies organized during the boom were paying dividends to shareholders in 1843 (Hunt, 1936).

Great Britain's first railroad stock began trading in 1825. For the next decade, an average of five new railroad companies issued shares each year. In 1836, 29 railroad corporations sold stock for the first time and the initial sale of shares of 17 additional transportation companies occurred in 1837 (Kindleberger, 1984).

Before 1840, most railroad stocks were marketed and traded in local markets; the majority of shareholders were not London financiers but local investors with knowledge of the venture's benefits and profit potential (Baskin, 1988). Several of these issues were paying dividends in excess of 10 percent by 1840 and almost all of the companies paid dividends of at least 6 percent. By 1844, these issues had developed a reputation among investors for their security and profitability (Hunt, 1936). Railroad issues experienced an almost manic boom over the next ten years; the trading activity and price increases were unprecedented in British financial history. A flood of new issues were offered to investors; these shares required small initial payments for purchase. The market collapsed in 1847 when calls for additional capital led to the sale of shares by investors unable to meet those calls. Of the large number of companies organized between 1844 and 1868, only 42 percent were still operating at the end of the period (Hunt, 1936).

Corporate finance of railroad companies in the middle of the nineteenth century was fraught with dishonesty. Dividends were commonly declared before profits were determined and were often paid out of accumulated capital or from the proceeds of subsequent issues (Kindleberger, 1984). The aggregate nominal dividend return on railroad stocks in 1854 was 3.39 percent (Baskin, 1988).

The repeal of the Bubble Act in 1824 removed most of the existing restrictions on joint stock company organization but kept the requirement of Parliamentary approval for incorporation. This stipulation was not lifted until an act allowing general incorporation was passed in 1856. The act also included a provisions granting shareholders limited liability (Kindleberger, 1984). The share price of corporation stocks rose steadily in the decade following the enactment of the limited liability statute, especially the price of shares of those companies incorporated after the act's passage. Shares requiring full payment at purchase became the rule rather than the exception of securities of this period (Jeffreys, 1954). The limited liability clause provided the impetus for the formation of over 2500 new companies between 1856 and 1862 (Hunt, 1936); the securities market continued to grow rapidly for the next twenty years (Shannon, 1954). Unfortunately, the limited liability provision had no effect on the investor's personal risk when purchasing shares offered by joint stock companies; the average life of initial issue corporations of the period was less than four years (MacGregor, 1929).

2.4.2 Corporate Activity in the United States

Between 1800 and 1823, 557 manufacturing corporations were incorporated in the United States with over half of the new corporations based in New York or Massachusetts. Cotton manufacturing corporation dividends during the period averaged 5.5%; the textile mill dividends averaged almost twice that rate. Textile makers paid dividends of between 10 and 20 percent during the War of 1812 (Clark, 1929a).

Manufacturing corporation profits in the United States increased significantly following the War of 1812. The industrial revolution increased production, wealth and precipitated a change in business methods of American corporations (Faulkner, 1924). The allure of increased profits enticed outside investors to contribute capital to these ventures (Davis, 1917); equity sales became the mills' most important source of capital in the first half of the nineteenth century (Davis, 1971). Up to this time, many of the textile mills had been closely held. Share par values ranged from 25 to 1000 dollars per share (Clark, 1929a). Despite these advances, only a few U. S. financial firms were capitalized in excess of \$500,000; the majority of manufacturing and other industry corporations had less than \$50,000 capital (Davis, 1917).

U.S. corporate issues began to be offered for sale in Great Britain during the early nineteenth century. Shares of existing corporations as well as new issues were sold through investment bankers with offices in the United States and Great Britain (Carosso, 1970). Sales commissions averaged 1-2 percent originally but increased competition in the middle of the century between investment bankers halved commission rates (Hidy, 1941).

The temporary shutdown of many of the mills for two years following the War of 1812 was followed by payment of between 6 and 8 percent dividends for the next ten years. The losses and lack of dividends during the Panic of 1829 were offset by dividends averaging 13.33 percent for the three years following the recession. Textile dividends averaged 7.6 percent between 1825 and 1830 and 14.5 percent between 1831 and 1860.

The beginning of the Civil War brought another increase in profitability and a further increase in Northeast textile mill dividends. Dividends increased from 8 percent in 1860 to between 10 and 20 percent the following year. One textile mill paid a 66 percent dividend to its shareholders in 1861. Textile corporation paid dividends of 25 to 50 percent in 1865, the most profitable year in the industry's history (Clark, 1929b).

Early offerings of U. S. railroad company shares were primarily retailed to local investors with knowledge of the profit potential. Most of the capital raised for railroad construction in areas with high population density and a large number of potential investors was through the sale of equities. This practice was especially common in New England. In contrast, western U. S. railroads were primarily financed with mortgage bonds due to fewer potential investors (Baskin, 1988).

Beginning around 1800, special charters began to provide remedy against capital impairment caused by board of director dividend declaration and payment. Although the profit rule and the capital impairment rule became common in U. S. corporate charters before 1825, dividend policy continued to be governed by special clauses in each corporate charter. The first general dividend statute, enacted in New York in

1825, made it unlawful to pay dividends except out of corporate profits. The corporation's board of directors was liable for damages if the law was violated. The statute was widely copied by other states. A third general rule, the insolvency rule, was first adopted in Massachusetts in 1830. This rule prohibited the payment of a dividend when the firm was insolvent or the declaration or payment of a dividend that would make the firm insolvent. As with the profit rule, the corporation's board of directors were held accountable for this action. This rule was readily adopted by other states (Kehl, 1941).

2.4.3 The Origins of Preferred Stock

Transportation companies in 1836 were the first U. S. corporations to employ more than one class of stock (Evans, 1929). Railroad companies needed additional infusions of capital but poor financial conditions precluded raising additional funds from new investors to complete construction projects and current investors were not likely to increase their investments in the companies due to a lack of dividends or capital gains on their earlier investments (Baskin, 1988). The idea for preferred stocks can be traced to Europe where shares with dividend priority or preference already existed (Evans, 1929). Transportation, clothing, brewing and manufacturing corporations in Great Britain and Germany commonly used multiple classes of stock at this time (Evans, 1931).

States were petitioned by transportation companies for aid for both existing project completion and new projects. In 1836, Maryland legislators introduced a bill providing public funds for projects in return for a guaranteed dividend from the stock

issue. The bill passed with the semi-annual dividend payments starting three years after stock issuance. This initial offering was soon followed by preferred stock issue by other corporations in Maryland and in other states. Some of the issues were designed to convert to common shares on a future date while others remained non-participating preferred stocks. One issue also allowed the state to have control over the corporation's board of director appointments (Evans, 1929).

The second stage in the development of preferred stock began in the next decade with the sale of shares to private investors. The promise of regular dividends was exchanged for new funds. Since original equity issue investors had received no dividends from their investments, two classes of shares evolved; a class of stock with guaranteed dividends and another with no guarantee of dividends. Preferred stock became an accepted vehicle for emergency fund raising by transportation corporations; several new railroad preferred issues began trading between 1843 and 1850. Around 1850, nine different preferred issues were available for purchase by investors. These early guaranteed dividend issues were sold only in time of financial need for expansion or reconstruction of existing lines rather than in initial offerings.

The dividend rate and period of payment varied considerably among issues during this period but dividend rates of 10 to 12 percent of original issue price were not unusual. The high rates of returns were required to secure investor interest and give original issue purchasers the opportunity to earn a fair return on their total investment by increasing their stake in the firm. The board of directors or shareholders determined the duration of the dividend payment and the level of the payment. As a rule, the

shares were preferred only until a dividend was paid on all shares; then the stock was converted to common shares. The dividends were cumulative, non-participating and carried the same voting rights as common shares (Evans, 1929).

Until 1850, preferred stock was used as a temporary mechanism for increasing capital and employed almost exclusively by the railroad industry. Issuance of preferred stock before 1850 was invariably associated with financial distress. Bond interest was often paid with the proceeds from preferred stock issues. As the number of preferred issues grew, the security developed a distinct place in corporate structure with more clearly defined rights and privileges. The uses of issue proceeds and characteristics of the issues also began to diverge. The participation feature became customary in preferred stock issues (Evans, 1931); however, the issues were for the most part non-participating in the event of asset distribution (Stevens, 1937).

In 1855, ten railroad preferred issues were trading; in twenty years the number had increased to 44 issues. Companies began to issue more than one class of preferred stock. At the same time, several of the corporations began to limit the rights of preferred shareholders (Evans, 1931). The last fifty years of the nineteenth century saw railroad stock in the United States develop into the predominant public market in corporate securities (Baskin, 1988).

The Pennsylvania Railroad Corporation used preferred stock to fund the merger activity that made it the world's largest corporation in 1871. The company strengthened the investor's perception of preferred stock--a security without the negative connotation often associated with fixed income securities and less risky than equity

issues. The attractive dividend rate and dependability of equity dividends of preferred stock also helped increase the public's opinion of common stock as a legitimate investment vehicle (Baskin, 1988).

During the late nineteenth century, the Pennsylvania Railroad Corporation retained a portion of its earnings. This policy, although not uncommon in the United States, prompted investors in Great Britain to send representatives to meet with corporate management and express their opinion that all corporate earnings should be distributed to shareholders (Baskin, 1988).

Although the power to issue preferred shares was given expressly by statute, exceptions were not uncommon. The legal system of the time viewed preferred issues as a form of mortgage on company assets (Evans, 1929). Around 1852, a change in the legal process of preferred share issuance occurred due to the increase in the number of issues. General acts rather than specific acts allowing preferred stock issue became customary (Evans, 1931).

2.4.4 Summary

Paying consistent dividends remained of paramount importance to managers during the first half of the nineteenth century. Less than scrupulous corporate managers continued to resort to fraudulent activities to maintain the payment stream. Limited shareholder liability became a standard during the first half of the century and general statutes governing dividend payments began to be enacted. Preferred stock matured from its original use as a simple alternative capital raising instrument to a security with its own unique set of characteristics.

2.5 THE RISE OF THE INDUSTRIAL CORPORATION: 1865-1920

2.5.1 Corporate Activity in Great Britain

The number of joint stock companies in Great Britain increased rapidly during the last two decades of the nineteenth century from 1302 corporations in 1880 to 6182 in 1898 (Conant, 1904). In 1914, 76.4 percent of corporate earnings in Great Britain was paid to shareholders in the form of dividends (Baskin, 1988); preferred stock dividend requirements consumed 21 percent of the earnings while the remaining 55 percent was used to pay common stock dividends. The higher personal tax rate in Great Britain necessitated higher dividend payments by British corporations than their American counterparts (Montgomery, 1927).

2.5.2 Corporate Activity in the United States

Before 1865, equity was the most important source of capital for U. S. manufacturing corporations. The need for investment capital was greatest when the firm was least able to find funds--during initial organization. This pattern was especially true of the textile industry. Legal restrictions against stock issues at less than par and the average proprietor's aversion to dilution of ownership and managerial control restricted capital raising success. Most manufacturing firms before 1880 remained closely held--75 percent of the shares of the eleven largest textile mills of the period were held by less than 750 investors (Davis, 1917).

Following the Civil War, the majority of Northern manufacturing companies paid regular dividends. The Lowell Company, the premier textile manufacturer in New England, averaged paying 18 percent dividends during the decade following the war.

Despite their closely held nature, these companies continued to pay significant dividends. Dividend payments for all textile manufacturers averaged almost 8 percent per year until the beginning of the twentieth century despite the temporary suspension of dividends by many companies following the panic of 1874. Manufacturing production increased twice as fast as the population during this decade (Clark, 1929b).

The dawn of the twentieth century brought a further change in American business. The percentage of manufactured goods being exported had tripled the 35 years following the Civil War to over 30 percent of all manufactured products (Conant, 1904). Before the Civil War, individuals seeking investment opportunities bought real estate. Equity share investment opportunities were limited primarily to railroad stocks. The only industrial stocks available to investors were coal and textile firms (Navin and Sears, 1955). Before 1890, the Pullman Palace Car Company was the only manufacturing firm traded on the New York Stock Exchange (NYSE). Its close association with the prosperous railroad industry caused investors to consider the company more of a railroad firm than an industrial firm (Baskin, 1988).

Investor confidence in industrial firms increased dramatically at the end of the nineteenth century due to the payment of high dividends by nearly all issues almost immediately after their inception (Faulkner, 1924). At the same time, railroad bond interest rates declined from 7 to 3.5 percent (Conant, 1904). Dividends were frequently paid out of capital by these newly organized firms and the use of capital for dividend payment by firms in financial distress was common (Faulkner, 1924). These

extravagant dividend payments led to financial distress and bankruptcy by many of the firms (Baskin, 1988).

The majority of the other manufacturing firms of the period were small partnerships or closely held corporations. Many companies remained family owned, even the larger manufacturers like Singer and McCormick. However, ownership in the New England textile corporations began to be more widely disseminated. The trading of these shares was primarily consummated on the Boston Exchange. The shares were regarded as investment grade securities and often were used as loan collateral.

Marshall Field and Company, Macy's and other large department stores of the period were all partnerships. Sears, Roebuck and Company, Woolworth, Montgomery Ward and The Great Atlantic and Pacific Tea Company were all in their infancy during this period; of these, only Montgomery Ward was incorporated.

Most of the extractive companies of this era were small partnerships. Homestake Mining and Standard Oil were peculiarities as were a few large, publicly traded copper and iron mining firms. Coal mining firms were viewed by investors essentially as railroad stocks due to their close ties with the railroad industry (Navin and Sears, 1955). Standard Oil paid dividends ranging from 5.25 percent to 30 percent during the last twenty years of the nineteenth century (Faulkner, 1924).

The processing industries, especially sugar and oil refining companies, were the first industrial firms to attract public interest. The trust form of organization used by many of the firms in these industries were the forerunner of modern corporate mergers. Trust formation began when the majority of oil companies deposited their securities

with a group of trustees with the expressed goal of decreasing overproduction. A few of the individual corporations remained independent. The managers of the individual member firms of the trust coordinated their commercial strategy to meet joint objectives.

Other industries forming trusts during the period included the cotton, whiskey, and sugar refining industry. Very little earnings and operational information was available to investors. Although the shares of the Standard Oil trust were closely held, shares of the other trusts were actively traded. Trusts commonly sold preferred stock secured by fixed assets and backed by earning capacity and common shares embodying the risk, uncertainty and anticipated growth of the enterprise. The average volume of these shares dwarfed other issues--during the last half of 1889, an average of 150,000 trust shares exchanged hands each week; only 2,000 shares of Pullman Car Company were traded on average per week (Navin and Sears, 1955).

In 1890, fewer than ten industrial stocks were traded and quoted on the NYSE. This number had increased to more than 30 issues by the crash of 1893 and to over 200 by 1897. Industrial securities of the period were concentrated in the manufacturing, distributive, extractive and processing industries. The Dow Jones Industrial Average began to be reported in the middle of this decade followed by the publication of *Moody's Industrial Security* in 1900.

Financial information other than the company's capitalization and dividend record was frequently unavailable to investors in the early twentieth century. Utility, financial and railroad corporations generally provided more detailed data than other

companies of the period. Before World War I, demands for increased disclosure of information by the shareholders were generally ignored by managers (Hawkins, 1963).

The NYSE, Investment Bankers Association of America, public accounting firms and the U. S. government began to require increased disclosure from publicly held corporations. The NYSE lacked stringent regulations for securities during the nineteenth century (Michie, 1986). As time passed, the exchange sought to increase regulation. The 1869 requirement for annual report publication by listed corporations was largely ignored when first instituted by most managers; quarterly reports were not required until 1926 (Hawkins, 1963).

Returns from industrial corporation shares began to surpass railroad company stock returns after the Civil War. The extreme volatility of the market immediately following the war decreased during the last fifteen years of the century (Smith, 1928). Between 1872 and 1899, the income from industrial and utility common stock was greater than the income provided by railroad bonds (Snowden, 1990). Overall, industrial stocks fared better than railroad stocks in the depression of the last decade of the nineteenth century. The three largest industrials of the time paid dividends throughout the depression; only General Electric failed to pay dividends and the suspension of dividends was the result of cash retention by corporate management rather than the consequence of a lack of earnings (Navin and Sears, 1955). The return on investment in industrial, utility and railroad common stocks exceeded the return from railroad bonds from 1900-1920 (Smith, 1959).

Corporate dividends before 1920 did not reflect the cyclical economic influences shown by stock prices (Snowden, 1987). Dividend payments and stock prices trended in opposite directions during the first 20 years of the twentieth century in contrast to the positive relationship shown before 1900 (Van Strum, 1927). After 1900, consistent strong earnings by corporate America led to a gradual increase in dividends but the increased earnings precipitated by World War I were not reflected by increased dividends (White, 1990). However, the aggregate dividend payment by American corporations during the first two decades of the twentieth century increased more rapidly than nominal stock prices (Snowden, 1990).

Dividends did not begin to be smoothed by corporate management until after 1920 (Van Strum, 1927). The increased variability of dividends during the period is a potential explanation for the extreme volatility of stock prices during the period (Baskin, 1988). Increase volatility during this period was also partially the result of attempts by professional traders to manipulate share prices (Allen and Gale, 1992).

The mean return from common stock dividends between 1871 and 1925 was 5.17 percent. Average share dividends exceeded eight percent in 1918 while returns fell to less than four percent in 1886, 1890, 1898, and 1906-1907. Table 2.3 shows the average dividend income per share by year from 1871 through 1919.

2.5.3 The Maturation and Specialization of Preferred Stock

Although not actively traded, preferred stock was important in the emergence of industrial corporations (Navin and Sears, 1955). At the end of the nineteenth century, preferred stock began to be viewed as an investment distinct from common

TABLE 2.3
DIVIDEND INCOME ON COMMON STOCKS BY YEAR¹
1871-1919

Year	Dividend Income (Percent)
1871	5.57
1872	5.17
1873	5.07
1874	7.37
1875	6.35
1876	6.47
1877	5.32
1878	5.39
1879	6.24
1880	5.24
1881	4.98
1882	5.12
1883	5.54
1884	5.97
1885	5.34
1886	3.78
1887	4.14
1888	4.17
1889	4.28
1890	3.85
1891	4.72
1892	4.43
1893	4.12
1894	4.40
1895	4.53
1896	4.17
1887	4.38
1898	3.81
1899	4.10
1900	4.35
1901	4.45
1902	4.02

TABLE 2.3 (continued)
DIVIDEND INCOME ON COMMON STOCKS BY YEAR
1871-1919

Year	Dividend Income (Percent)
1903	4.10
1904	4.54
1905	4.19
1906	3.95
1907	3.98
1908	6.02
1909	5.34
1910	4.16
1911	5.09
1912	5.22
1913	5.25
1914	5.03
1915	5.61
1916	6.39
1917	7.48
1918	8.58
1919	6.37

¹ From Wilson, Jack W. and Charles P. Jones, 1987, A Comparison of Annual Common Stock Returns: 1871-1925 with 1926-85, *The Journal of Business*, 60, 239-258.

stock. The fixed dividend rate was likened by most investors to bond interest payments (Stevens, 1936a). The issue of preferred stock allowed repatriation of sunk costs without loss of control and was an inexpensive and safe method for raising funds (Navin and Sears, 1955). Preferred shares were customarily viewed as an investment

in the firm's tangible assets; common stock represented the company's growth potential (Dewing, 1926). Before 1904, preferred stock had a preference only to dividend payment; in return for this preference, dividends were limited in amount. Later issues were cumulative and also had prior claim to assets in the event of bankruptcy (Dewing, 1953). Participation in profits by preferred shares began to appear in corporate charters, especially in railroad and utility preferred issues (Stevens, 1936b).

The investing public was already familiar with preferred issues from the railroads' long use of the security. Industrial and utility corporations began to use preferred stock to raise capital on more liberal terms in the last decade of the nineteenth century and the first two decades of the twentieth century (Dewing, 1926). Between 1890 and 1893, at least 23 investment grade preferred issues began trading; these issues were predominately offered in exchange for existing securities and were sold at par without regard to dividend rate. The majority of the industrial preferred issues traded on the NYSE had 7 to 8 percent cumulative dividend rates (Navin and Sears, 1955).

A second type of preferred stock was offered by railroad, utility, industrial and financial corporations in reorganization. If the company was unable to extend current liabilities, current debt was often refunded with non-cumulative preferred stock. Although yields and other features were unattractive to debtholders, the alternative of default on the debt by the corporation left the creditor with little choice (Dewing, 1953).

Preferred stock dividends averaged over 8 percent before 1897 and averaged 6.7 percent between 1897 and 1920. Industrial corporation preferred stock had the highest

yield since these firms were more disinclined to use debt financing. Utility corporations issued cumulative preferred stock primarily after the depression of 1903; yields averaged six to seven percent (Dewing, 1926). Most shares carried voting rights but investors viewed the right as superfluous as long as dividends were paid (Stevens, 1938). The voting rights were only exercisable under special charter provisions on many of the issues (Bradley, 1948).

The issues distributed by companies in reorganization before 1905 were non-cumulative and were habitually issued with lower dividend rates (Berle, 1923). The board of directors uniquely determined if dividends were to be paid on the shares (Stevens, 1936c). Of the 51 preferred stocks traded on the exchange, 32 of the issues were issued during corporation reorganizations. Despite the precarious economic conditions surrounding the origination of the majority of these issues, dividends were paid on these shares 83 percent of the time (Spal, 1942).

2.5.4 The Origins of No-Par Stock Issues

Shares of stock were originally issued with a minimum fixed value called par that was defined as the valuation of the participation in the rights of ownership. The purpose for requiring the payment of a minimum fixed amount was to protect the creditors of the corporation (Berle and Means, 1932). The payment of a cash equivalent to par was required initially. Later, property, services and intangibles of equal value became acceptable substitutes. The legal dilution of par value began when management began to be allowed to value the non-cash equivalents used for payment of par (Dewing, 1926).

Owners of issued shares could not collect par value from the corporation even though the amount was paid in full; the shares' current trading price on the exchange was the maximum price per share available to the shareholder (Dewing, 1926). Par also allowed the investor to approximately value the corporation even with the crude accounting methods of the period (Baskin, 1988). Railroad and industrial shares were commonly issued with a par value of \$100; early railroad shares had a par value of \$50 (Montgomery, 1927). Copper mining shares were often issued with a \$25 par value; other mining stocks were issued with pars as low as \$1.

Shares designed to participate in earnings only but not representing ownership in corporate assets began to be issued without a par value in the first decade of the twentieth century. Capital stock taxes were levied on the shares assuming a par value of \$100. Subsequent offerings were issued with low par values--\$1 or \$5--bearing little relation to the historical contribution (Dewing, 1953).

The New York Bar Association began lobbying for legal issuance of no par stock before the beginning of the twentieth century. Par value was criticized for causing confusion among investors and for unfairly pegging the value of the shares to their par value. The trading price of par value shares tended to gravitate toward par. Others criticized par value due to the difficulty of assessment of a true value of the corporation. The decline of trading price below par value enables new shareholders to purchase the shares at a discount compared to original investors paying par for the stock. Proponents argued that the retention of par value would maintain the distinction

of capital and profits to be used for dividend payment and would provide a "true" value for investors to use in their analysis of an issue (Dewing, 1926).

The issuance of no par stock was first legalized in New York in 1912 (Berle and Means, 1932). More than 20 states followed this precedent and allowed the issue of no par stock by 1923; by 1927 almost all states allowed the issuance of no par shares (Dewing, 1926). By 1919, 27 NYSE corporations had issued no par stock; the number had increased to 189 companies by 1924 (Montgomery, 1927).

2.5.5 Summary

In the years following the Civil War in the United States, the general lack of publicly available financial information required investors to value industrial securities solely using their dividend history. The rise of industry trusts increased investor interest in the securities markets and trading activity increased. Smoothing of corporate dividend streams began to be practiced by managers and specialized uses of preferred stock and no-par common stock increased.

2.6 THE ROARING TWENTIES AND THE GREAT CRASH: 1920-1929

2.6.1 The Boom and the Bust

Until 1920, common stock was not viewed as an investment grade security; only railroad bonds and industrial preferred stock were purchased by conservative private and institutional investors. At this time, security analysts began advocating the purchase of common stocks as an inflation hedge. The increased risk and short-term

volatility of stock were balanced by the benefits of superior returns over the long-term (Snowden, 1990).

The shareholder rolls of American corporations increased dramatically in the first three decades of the twentieth century (Carosso, 1970). Corporate shareholders increased from 500,000 in 1900 to two million in 1920 to over ten million by 1930 (Baskin, 1988). The most rapid period of increase was from 1917-1923. Less affluent investors--those not in the top income bracket--became shareholders in record numbers during this time. The percentage of share ownership by those individuals with the top 25,000 incomes in the United States declined from 57 percent in 1916 to 37 percent in 1921. These increases were the result of customer ownership campaigns, employee stock ownership plans, decreased share attractiveness to the wealthy due to high dividend tax burdens, a decrease in the World War I surtax following the end of the conflict (Means, 1930), funds available for investment from Liberty Bond maturation and a decrease in the commission rate on smaller share purchases (Carosso, 1970).

Dividends paid by corporations increased from \$2.10 in 1871 to \$6.62 in 1929 (White, 1990). In 1920, share prices were low and dividend yields were relatively high. The market began a long rise in mid 1921 with only minor corrections in 1924 and 1926 (Galbraith, 1954). Total yearly share volume increased 500 percent from 1921-1928 (Klingaman, 1989). The bull market beginning after World War I was largely the result of the public's expectations of continued dividend increases greater than the actual increases (Galbraith, 1954). Corporate earnings averaged 9 percent per year from 1922-1927 while dividends averaged 6.8 percent (White, 1990). Dividends

of industrial firms averaged seven percent during the period (Fisher, 1930). In 1927, \$1.5 billion was paid in dividends (Wilbur, 1932).

As American businesses prospered in the 1920's, stock values increased. Within a five-year period, stock prices rose threefold (Erickson, 1972). Share volume also increased 250 percent from 1927-1929 while bond offerings decreased 38 percent during the same period (Carosso, 1970). Railroad stocks fell in relation to utility and industrial shares, especially utility shares (White, 1990). In 1927, the bull market began in earnest; by 1928, buy orders overwhelmed the capacities of the brokerage houses (Galbraith, 1954). Trading hours on the NYSE were shortened in hope of decreasing the trading volume (Carosso, 1970). As share prices continued to increase, corporate managers began to slow dividend increases in an attempt to retard investor speculation and enthusiasm. Other managers warned the public of the overvaluation of company shares and the unrealistic nature of their expectations (White, 1990). Analysts warned of the impending crash; professional financiers and traders began to quietly withdraw their funds from the market (Erickson, 1972). Other investors heeded few of these cautions and share prices continued to increase rapidly outpacing dividend increases (White, 1990).

March 1928 marked the beginning of a "speculative mania" (Galbraith, 1954). Novice and seasoned investors alike purchased stocks with their savings believing that stock prices would increase indefinitely (Erickson, 1972). On March 5, General Motors (GM) stock increased in price \$5 and had risen \$10 by the end of the week. Record Corporation of America (RCA) increased \$13 the same week. Despite the

common favoritism shown to these issues by speculators, the stocks were dissimilar. GM had recently promised to increase dividends and investors expected the recent increases in earnings to continue. RCA on the other hand had not yet paid a dividend nor would the firm pay dividends for many years to come (White, 1990). Speculative stocks of infant industries--radio, airplane and movie corporations--paying little or no dividends enjoyed the greatest increase in price (Carosso, 1970). The stable dividend paying railroad stocks languished during the boom. The average dividend per share increased to \$5.97 in 1928 (White, 1990).

Total dividends increased to \$2.6 billion in 1929 (Wilbur, 1932). Dividend increases averaged slightly less than eight percent per year for the decade with the average dividend paid to common shareholders doubling in less than ten years (Brittain, 1966). Quarterly dividends continued to rise in late 1929, increasing 12.8 percent in the third quarter and 11.6 percent in the fourth quarter. Although slowed, dividend increases and stock prices gave no indication of the imminent recession (White, 1990). The stock market decline beginning in 1929 cannot be logically explained by dividend decreases (Shiller, 1981). The 240 leading issues of the NYSE lost 2.8 billion dollars in market value during September 1929 (Klingaman, 1989).

Bear raids were not the cause of the drastic fall in prices but other forms of stock price manipulation were common. Trading pools--investor groups that purchased blocks of stocks, circulated rumors that led to price increases, and sold their blocks at a profit-- were not uncommon (Allen and Gale, 1992).

Dividend payments exceeded net income from 1922-1933; the shortfall in income was paid from accumulated surplus (Sage, 1937). The average dividend yield on all NYSE stocks from 1921 to 1930 ranged from a low of 3.5 percent to a high of nine percent. Blue chip issue yields from 1897-1930 ranged from a low of 2 percent immediately preceding the crash to a high of 7.5 percent (Sloan, 1931). Table 2.4 shows the average dividend yield on a share of common stock by year from 1920-1929.

TABLE 2.4
DIVIDEND INCOME ON COMMON STOCKS BY YEAR¹
1920-1929

Year	Dividend Income (Percent)
1920	5.52
1921	6.50
1922	6.67
1923	5.77
1924	6.25
1925	5.73
1926	5.62
1927	5.20
1928	4.32
1929	3.82

¹ Dividend income 1920-1925 from Wilson, Jack W. and Charles P. Jones, 1987, A Comparison of Annual Common Stock Returns: 1871-1925 with 1926-85, *The Journal of Business*, 60, 239-258. 1926-1929 from *Stocks, Bonds, Bills and Inflation 1992 YearbookTM* (annually updates work by Roger G. Ibbotson and Rex A. Sinquefeld), Chicago, Illinois: Ibbotson Associates, Inc.

The percentage of earnings paid out as dividends increased for most industry sectors from 1920 to 1929 (Brittain, 1966). The increase in dividends between 1920 and 1929 was significantly higher than the increase in earnings by most industry sectors. The ratio of net dividends to net profits increased to 70 percent during this decade. Table 2.5 shows the payout ratio for 1920 and 1929 by industry sector.

TABLE 2.5
DIVIDEND PAYOUT RATIO BY INDUSTRY¹
1920 AND 1929

Industry	1920	1929
Mining	55	91
Construction	35	60
Food	169	72
Textiles	128	117
Lumber	37	93
Paper	37	60
Printing	36	63
Petroleum	112	52
Rubber	# ²	322
Leather	#	97
Stone, Glass	29	66
Metals and Products	42	57
Wholesale Trade	68	74
Retail Trade	90	92
Finance	284	95
Public Utilities	77	71
Services	74	75
All Corporations	64	71
All Manufacturers	55	63

¹ From Brittain, John A., 1966, *Corporate Dividend Policy*, Washington: The Brookings Institution.

² #: Negative profits for the year.

In 1929, the number of new stock issues exceeded the number of bond issues for the first time. The number of new equity issues doubled from 1927 to 1928 and approximately doubled again the following year (Carosso, 1970). Table 2.6 shows the number of new equity issues by year from 1919 through 1929.

TABLE 2.6
NEW EQUITY ISSUES BY YEAR¹
1919-1929

Year	New Equity Issues
1919	1,546
1920	1,038
1921	275
1922	621
1923	736
1924	865
1925	1,247
1926	1,220
1927	1,738
1928	3,491
1929	6,757

¹ From Carosso, Vincent P., 1970, *Investment Banking in America, A History*, Cambridge, Massachusetts: Harvard University Press.

In 1925, 13 percent of preferred issues had a dividend rate of 6 percent, 68 percent paid 7 percent, and 13 percent paid 8 percent (Dewing, 1926). The yield on preferred stocks had fallen to 4.7 percent by 1929 (Graham, Dodd, and Cottle, 1962).

2.6.2 Summary

A major change in the distribution of wealth and share ownership occurred in the United States during the early twentieth century. Stocks continued to be valued primarily by dividend payment history; other financial information was still generally unavailable. The increases in corporate dividend payments during the decade were reflected in rising stock prices. The first express use of dividends as a signaling mechanism in the months preceding the 1929 crash failed--investors acknowledged the dividend increase signal by bidding up the share price but ignored the negative connotations associated with the slowing of dividend increases. The growth in dividend payments during this decade outpaced the growth in earnings and many firms were forced to use retained earnings to fund the higher payments.

2.7 MODERN DIVIDEND HISTORY: 1930 TO THE PRESENT

2.7.1 Post-Crash Corporate Activities

In 1931, the management of General Motors announced that all earnings should be paid as dividends in poor economic times and if a corporation is sound, the use of accumulated surplus to maintain the dividend is justified (Wilbur, 1932). Shareholders began to lobby Congress to decrease corporate retained earnings and increase dividend payments. The Revenue Act of 1934 threatened to heavily tax undistributed corporate earnings; the Revenue Act of 1936 began the taxation of retained earnings. In response, many corporations increased dividends or declared special dividends (Sage, 1937) despite having profit levels 22 percent below their 1926-1929 average (Jaeger, 1972). Managers were thankful to have an excuse for increasing dividends; the large

number of business failures early in the decade had seriously shaken shareholder faith in corporate management and many of the managers believed that increasing dividends was a low cost method of restoring investor faith (Graham and Dodd, 1934).

Large corporations in the United States distributed more than 80 percent of their earnings as dividends in 1937. This increase in dividends totaled greater than 1.1 billion dollars in 1936 and 1937, one-third greater than expected (Lent, 1948). Despite the increases, the net dividend/net profit after tax ratio fell to 35 percent during 1929-1947. Although corporate profits were 90 percent greater in 1946 and 1947 than in 1929, aggregate dividend payout was only three percent greater (Brittain, 1966).

During World War II, corporate cash dividends were paid using Liberty Bonds (Preinreich, 1978). Dividend increases averaged six percent per year in the fifteen years following the end of the second World War; corporate net profits after tax increases averaged two percent per year during the same period (Brittain, 1966).

The ratio of net dividends to net profit after tax, the dividend payout ratio, increased to its highest level during the twenty years following World War II (Brittain, 1966). Table 2.7 shows the dividend payout ratio for 1947, 1960 and the 1920-1960 period by industry sector.

The ratio of dividends paid to net earnings in the electric utility industry showed exceptional stability from 1947 to 1959. Individual firm ratios were much more volatile during the period (Dhrymes and Kurz, 1964).

TABLE 2.7
DIVIDEND PAYOUT RATIO BY INDUSTRY¹
 1947, 1960 and 1920-1960

Industry	1947	1960	1920-1960
Mining	38	95	78.0
Construction	15	# ²	37.4
Food	42	53	59.4
Textiles	24	41	52.1
Lumber	22	74	52.5
Paper	24	62	47.6
Printing	33	40	46.7
Petroleum	38	55	53.5
Rubber	29	58	43.4
Leather	33	73	67.5
Stone, Glass	36	58	47.6
Metals and Products	36	64	52.0
Wholesale Trade	20	33	35.1
Retail Trade	25	68	49.6
Finance	58	59	67.2
Public Utilities	66	92	83.0
Services	36	102	65.5
All Corporations	36	62	58.2
All Manufacturers	34	58	52.3

¹ From Brittain, John A., 1966, *Corporate Dividend Policy*, Washington: The Brookings Institution.

² #: Negative profits for the year.

2.7.2 Contemporary Dividend Policy

In the years following the second World War, corporate dividend policy in the United States and Great Britain has remained relatively unchanged and dividend payout levels relatively constant. In the 15 years following World War II, dividends increased

an average of 6 percent each year and the aggregate dividend payout ratio increased to levels comparable to the payout levels following the first World War (Brittain, 1966). A state of "inertia" has developed in the payment of corporate dividends (Dhrymes and Kurz, 1967). Dividends as a percent of net income have increased in Great Britain during this period (Thomas, 1978). The dividend rate was relatively unaffected by the high levels of inflation that characterized the American economy during and immediately following the War in Viet Nam showing only a slight increase during these years. The consistent level of dividend payment is evidence of the continued smoothing of dividends by corporate management (Ibbotson and Sinquefeld, 1982). Table 2.8 displays the average dividend per share for common stock from 1930 to 1991.

2.7.3 Summary

Over the past fifty years, a state of inertia has developed in corporate dividend policy. Dividend rates were relatively unaffected by the high levels of inflation characteristic of the American economy during and immediately following the War in Vietnam. The consistent level of dividend payments is evidence of the continued smoothing of dividends by corporate managers.

2.8 SUMMARY

Dividend payments to shareholders began as a simple convention of convenience. Joint stock shareholders found the payment of dividends solely from company profits while maintaining the enterprise as a going concern to be more efficient than divisions of all profits and company capital. Later corporate managers

TABLE 2.8**DIVIDEND INCOME ON COMMON STOCKS BY YEAR¹**

1930-1991

Year	Dividend Income (Percent)
<hr/>	
1930	4.57
1931	5.35
1932	6.16
1933	6.39
1934	4.46
1935	4.95
1936	5.36
1937	4.66
1938	4.83
1939	4.69
1940	5.36
1941	6.71
1942	6.79
1943	6.24
1944	5.48
1945	4.97
1946	4.09
1947	5.49
1948	6.08
1949	7.50
1950	8.77
1951	6.91
1952	5.93
1953	5.46
1954	6.21
1955	4.56
1956	3.83
1957	3.84
1958	4.38
1959	3.31
1960	3.26
1961	3.48

TABLE 2.8 (continued)

DIVIDEND INCOME ON COMMON STOCKS BY YEAR¹

1930-1991

Year	Dividend Income (Percent)
1962	2.98
1963	3.61
1964	3.33
1965	3.21
1966	3.11
1967	3.63
1968	3.18
1969	3.04
1970	3.41
1971	3.33
1972	3.09
1973	2.86
1974	3.69
1975	5.37
1976	4.38
1977	4.31
1978	5.33
1979	5.71
1980	5.73
1981	4.89
1982	5.50
1983	5.00
1984	4.56
1985	5.10
1986	3.74
1987	3.64
1988	4.17
1989	3.85
1990	3.36
1991	3.83

¹ From *Stocks, Bonds, Bills and Inflation 1992 Yearbook*TM (annually updates work by Roger G. Ibbotson and Rex A. Sinquefeld), Chicago, Illinois: Ibbotson Associates, Inc.

began to retain earnings to fund investment opportunities and dividends became symbolic liquidations of the enterprise paid from profits and retained earnings rather than distributions of all current profits.

The importance of significant dividend payments to maintain shareholder satisfaction was recognized early by corporate managers. Less than ethical activities were often used to continue dividend payments and the payments were often paid solely from retained earnings during unprofitable periods of company operations. The lack of financial information available to investors in the late nineteenth and early twentieth centuries magnified the importance of a history of consistent dividend payments; shareholders used this information as their primary input when valuing firms.

CHAPTER 3

THE EVOLUTION OF DIVIDEND POLICY THEORIES

3.1 INTRODUCTION AND INITIAL RESEARCH

Corporate dividend policy has captured the interest of economists for the last century and has been the subject of intensive theoretical modeling and empirical examination by financial economists over the last four decades. A number of conflicting theoretical models, all lacking strong empirical support, define the current state of financial economists' attempts to explain the dividend phenomenon. The purpose of this chapter is to examine systematically the academic attempts to explain corporate dividend policy.

Initial forays into explaining corporate dividend policy are divided as to their prediction of the dividend payment's effect on share price. Three schools of thought emerge: one faction sees dividends as attractive and a positive influence on stock price, a second bloc believes stock prices are negatively correlated with dividend payout levels and a third group of empiricists maintain that firm dividend policy is irrelevant in stock price valuation.

Common stock theory proponents maintain that the safety and total return from dividends and capital gains of common stock will exceed bond return over the long term. Common stocks are able to sustain purchasing power more effectively than bonds because as commodity prices increase, purchasing power decreases and the bond income and par value returned upon maturity become less valuable (Fisher, 1912). The

theory requires only fundamental assumptions; limited investor liability, complete markets and the ability of investors to diversify their portfolios. A number of elementary empirical analyses support the theory (see Norton, 1912, Smith, 1923, Van Strum, 1925, and Harold, 1934).

Preinreich (1932) sees dividend policy as merely a residual decision. Dividends are paid to shareholders if and only if revenues remain after all positive investment opportunities have been funded. Another method determines dividend payout by examining and estimating corporate contingencies and financial needs rather than more rudimentary approaches based simply on current funds availability or historical payout patterns (Sage, 1937).

Following the proclamation by Graham and Dodd (1934) that the corporation's main objective is to pay the owners of the firms (the shareholders) dividends, a preference for issues that pay regular cash dividends became the prevailing investment strategy in the financial community. A dollar paid as a cash dividend was shown to increase a share's price four times as much as a dollar retained. Dividend multiples became the preferred method for share valuation by both amateurs and professional money managers.

Harkavy (1953) shows empirical support for Graham and Dodd's proclamation by showing a positive correlation between stock price and dividend payout. The relation is modeled theoretically by Walter (1956). Over the long term, share price is the present value of expected dividends. Investors are willing to pay increased price premiums for issues with consistent dividend growth. Because current cash dividends

are less risky than future capital gains or higher expected dividend payments, dividend policy is relevant in firm valuation (Gordon, 1959, 1962). Lintner (1962) and Gordon (1963) show a decrease in the investor's required rate of return as dividends increase because the cash received from dividends is more certain than future capital gains. Stock prices are led by dividends in the long run and contemporaneous causality is found between dividends and security price (Sung and Urrutia, 1992). Conversely, Friend and Puckett (1964) posit that biased results from omitted variables, different methods of analysis and measurement errors likely undermine the early study results showing a strong preference by investors for dividends.

The seminal paper of Miller and Modigliani (1961) is the beginning of contemporary theoretical attempts to explain the role of dividend policy. Their model assumes perfect capital markets, rational investors, full and costless information, competitive markets, no transaction costs and no taxes. Firm investment policy is exogenous in the model. Using the arbitrage proof of Modigliani and Miller (1958), Miller and Modigliani (M&M) conclude that the dividend decision does not affect shareholder wealth nor the cost of capital--dividend policy is irrelevant. If investors can buy and sell securities to manufacture their desired dividend payout rate, the expected return required for investors to hold shares is not affected by the combination of new issues and gross dividend payments. Since dividend policy doesn't affect the discounting rate of expected future cash flows, the firm's market value is independent of changes in dividend policy. Accordingly, corporations have no incentive to follow a systematic policy. Financing decision indifference results in a shareholder

indifference to corporate dividend policy. Dividend policy is material only if a change in dividend policy relays information that investors do not have. Fama (1978) extends the model to a general equilibrium.

Empirical evidence is inconclusive as to the irrelevancy of dividend policy. The empirical results of Dhrymes and Kurz (1967), Brigham and Gordon (1968), McDonald, Jacquillat and Nussenbaum (1975), Bar-Yosef and Kolodny (1976), McCabe (1979), Anderson (1983), Peterson and Benesh (1983) and Jensen, Solberg and Zorn (1992) all fail to support the M&M irrelevancy proposition. These studies show the investment and dividend decisions to be interrelated. According to Peterson and Benesh (1983), market imperfections are the cause of the interdependencies.

Conversely, Higgins (1972), Fama (1974), Smirlock and Marshall (1983) and Frankfurter and Gong (1993) find empirical support for the proposition. The empirical results from this group of papers are too inadequate to reject the M&M irrelevance proposition. Fama (1974) posits that existing market imperfections are not significant enough to invalidate the independence of the two policies. Table 3.1 presents these works by their principal attributes.

The M&M model is generally accepted as valid if its assumptions are not violated. Modification of these assumptions and the introduction of capital market imperfections can cause dividend policy to become relevant. Dividend policy relevancy is solely due to market imperfections, inefficiencies, or irrationalities (Brealy and Myers, 1991).

TABLE 3.1

EMPIRICAL STUDIES OF THE MILLER AND MODIGLIANI (1961)
DIVIDEND IRRELEVANCE PROPOSITION

Author(s)	Data	Method of Analysis ¹	Major Result(s)
Dhrymes and Kurz (1967)	1951-1960 Annual	XSRA OLS, 2SLS, 3SLS	Reject M&M "behaviorally oriented conclusions". Investment and dividend decisions are interrelated.
Brigham and Gordon (1968)	1958-1962 Annual	MRA	Stock value is dependent on dividend policy. Required rates of returns increase with increases in leverage and retention rates.
Higgins (1972)	1961-1965 Annual	XSRA	Questions Dhrymes and Kurz (1967). Dividend payout is the result of profit and investment but is not causally related. Supports M&M independence proposition.
Fama (1974)	1946-1968 Annual	TSRA OLS, 2SLS	Results supports M&M--the evidence is inadequate to reject investment and dividend decision independence. Existing market imperfections do not invalidate independence.
McDonald, Jacquillat and Nussenbaum (1975)	1962-1968 Annual	XSRA OLS, 2SLS	Results are not consistent with the M&M the dividend irrelevance proposition and do not and support Dhrymes and Kurz (1967).
Bar-Yosef and Kolodny (1976)	1963-1971 Annual	XSRA	Security price and firm payout policy are positively related. Dividend policy is significant in explaining a security's return. Findings conflict with the M&M dividend irrelevance proposition.

TABLE 3.1 (continued)

EMPIRICAL STUDIES OF THE MILLER AND MODIGLIANI (1961)
DIVIDEND IRRELEVANCE PROPOSITION

Author(s)	Data	Method of Analysis	Major Result(s)
McCabe (1979)	1966-1973 Annual	XSRA OLS, 2SLS	Earlier research results in error due to model misspecifications and variable omissions. Investment and dividend decisions are interrelated. Findings fail to support M&M.
Anderson (1983)	1963-1977 Quarterly	TSRA	Corporate investment policies and opportunities likely influence the cash flows available for payment of dividends.
Peterson and Benesh (1983)	1975-1979 Annual	XSRA 2SLS, 3SLS, SUR	Financing decisions significantly impact investment decisions. Market imperfections lead to interactive policy determination.
Smirlock and Marshall (1983)	1958-1977 Annual	GC Test	Results support M&M. The dividend decision does not motivate the investment decision.
Jensen, Solberg and Zorn (1992)	1982, 1987 Annual	XSRA 3SLS	Insider ownership, debt policy, and dividend policy are interdependent. Dividend levels are paid after internal financing of investment opportunities. Insider holdings and dividends are inversely related.
Frankfurter and Gong (1993)	1979-1990 Quarterly	TSRA, XSRA, VAR	Dividend and investment policy are independent. Current dividends are only affected by past dividends. No industry effects are present. Previous empirical examination accuracy suffered from model misspecification.

¹ See Appendix A for method of analysis abbreviations.

Theoretical and empirical research attempting to explain corporate dividend policy can be broadly segregated into models formulated in states with full information, models in states with informational asymmetries and models using behavioral rationales as the basis for their development. Section 3.2 reviews theoretical models and empirical research in full information equilibriums adding the market imperfection of taxes. Section 3.3 examines investigation and modeling in states with asymmetric information; specifically the signaling, agency costs and free cash flow hypotheses. Behavioral models are discussed in Section 3.4. The chapter closes with a brief conclusion.

3.2 THEORETICAL EXPLANATIONS UNDER FULL INFORMATION

A large body of theoretical models and empirical research analyzes the effect of the market imperfection of taxes on corporate dividend policy. An early examination of the effect shows that depreciation allowances and individual tax rates substantially influenced dividend payout rates in the U.S. between 1920 and 1960 (Brittain, 1964). The significance of the effect of the tax code on the determination and implementation of corporate dividend policy is not questioned by the majority of writers. The models developed thus far are therefore not separated into paradigms supporting the contention that taxes do not affect corporate dividend decisions and those modeling the effect of taxes on corporate policy; rather, the paradigms can be better classified as tax-adjusted or tax-avoidance dividend models.

3.2.1 Theoretical Models

Tax-adjusted models surmise that investors require and secure higher expected returns on shares of dividend paying stocks. The imposition of a tax liability on dividends causes the dividend payment to be grossed up to increase the shareholder's pre-tax return. Under capital asset pricing theory, investors offer a lower price for the shares due to the future tax liability of the dividend payment.

One consequence of the tax-adjusted model is the division of investors into dividend tax clienteles. The clientele argument was first proposed in the seminal work of M&M (1961). In later research, Modigliani (1982) finds that the clientele effect is responsible for only nominal alterations in portfolio composition rather than the major differences predicted by Miller (1977). Masulis and Trueman (1988) model cash dividend payments as products of deferred dividend costs. Their model predicts that investors with differing tax liabilities will not be uniform in their ideal firm investment/dividend policy. As the tax liability on dividends increases (decreases), the dividend payment decreases (increases) while earnings reinvestment increases (decreases). Differences can be minimized by segregation of investors into clienteles.

The model developed by Farrar and Selwyn (1967) assumes investors maximize after-tax income. In a partial equilibrium framework, investors are presented with two choices. Individuals choose the amount of personal and corporate leverage and also choose whether to receive corporate distributions as dividends or capital gains. If the tax liability of capital gains distributions is less than the liability incurred by dividend distribution, rational investors will prefer capital gains; the preferred payment is the one

with the least tax liability. The model contends that no dividends should be paid; rather, share repurchase should be used to distribute corporate earnings.

The Farrar and Selwyn (1967) model is extended into a general equilibrium framework by Brennan (1970). In this setting, investors maximize their expected utility of wealth. Although the model is more robust, the predictions are similar to those of the Farrar and Selwyn model; an equilibrium with dividend paying firms is not consistent with a zero required return per unit of dividend yield.

Auerbach (1979a) develops a discrete time, infinite horizon model in that shareholders maximize their wealth. If a capital gains/dividends tax differential exists, wealth maximization no longer implies firm market value maximization. Subsequently, Auerbach (1979b) posits that dividends are distributed due to the consistent, long-term undervaluation of corporate capital. The undervaluation is the result of a dynamic process encompassing multiple periods of total reinvestment of all firm profits followed by firm returns less than the returns expected by investors. If firms are unable to make distributions to investors except in the form of dividends, shareholders must include the expected tax liabilities of future dividend payments to accurately determine market prices. These liabilities decrease the share price investors are willing to pay so as to increase the expected return from their investment. Stocks with dividend yields higher than the risk-free rate likely provide positive abnormal returns from the increased risk of these cash flows (see Bradford (1981) and Fung (1981) for further extensions).

Tax-adjusted models are criticized as incompatible with rational behavior by investors. Miller (1986) advances the strategy of tax sheltering of income by high tax

bracket individuals as a behavior more consistent with rational shareholder behavior. Individuals can, of course, not purchase dividend paying shares to avoid the tax liability of these payments. Alternatively, using a strategy first advanced by Miller and Scholes (1978), shareholders can purchase dividend paying stocks and receive the distributions, then simultaneously borrow funds to invest in tax-free securities. The interest charges on the loan are used to offset the tax liability of the dividend income while the income from the bonds is free of tax liability and consequently does not increase the investor's taxable income. The firm's value is independent of its dividend policy due to investor indifference between capital gains and dividends.

The use of dividend specific personal tax shelters (for example, the existing dividend income exemption) to avoid tax liabilities is advanced by DeAngelo and Masulis (1980). They contend that the Miller and Scholes (1978) tax shelter strategy is not sufficient to induce positive dividend payment at equilibrium. Fung and Theobald (1984) model tax shelters that are not based on interest charges and apply the theoretical results to the French, German, British, and U.S. tax systems. Dividend tax credits are incapable of inducing a positive dividend equilibrium; non-interest related tax shelters are required. The dividend payout level depends on the efficiency of the market for tax shelters and country specific tax law influences.

3.2.2 Empirical Investigation of the Tax Effect on Dividends

An examination of the pricing of the tax on dividends has been actively pursued since the results of these studies should conclusively support either the tax-adjusted model or the tax-avoidance model. The inevitable tax liabilities cause dividends to be

grossed up by discounting share prices in the tax-adjusted model. Several studies analyze this issue by adding an additional variable representing the price of the dividend component to the capital asset pricing model. If the coefficient on the dividend factor is positive, the results support the tax-adjusted model--returns on dividend-paying shares are increased and the tax rate on dividends is greater than zero; if zero, dividend paying shares are valued using the same pricing mechanism as non-dividend paying shares and the results support the tax-avoidance model.

The results of these studies are diverse. Black and Scholes (1974), Miller and Scholes (1982) and Hess (1982, 1983b) report insignificant or negative dividend coefficients. Christie (1990) finds a negative coefficient on a dummy variable representing the zero dividend firm. These zero dividend firms earn abnormal negative returns. The diverse results raise the question of the appropriate method of analysis (Hess, 1983a). Potential method of analysis inadequacies contributing to the non-homogeneity of the results include the linear model's suitability (Blume, 1980 and Elton, Gruber and Rentzler, 1983), the choice of the market portfolio proxy (Roll, 1977) and the influence of the information effect (Litzenberger and Ramaswamy, 1982 and Miller and Scholes, 1984). Table 3.2 summarizes the studies pricing the dividend component using the capital asset pricing model.

Other authors investigate share price changes during the period surrounding the ex-dividend date to determine if the tax on dividends is priced. Campbell and Beranek (1955) first document the tendency for the share price to decline less on the ex-date

TABLE 3.2

**EMPIRICAL STUDIES PRICING THE TAX ON DIVIDENDS BY ADDING
A VARIABLE TO THE CAPITAL ASSET PRICING MODEL**

Author(s)	Data	Method of Analysis ¹	Major Result(s)
Black and Scholes (1974)	1936-1966 Monthly	MRA	Pre-tax stock returns are independent of dividend policy. The share price is not influenced by choice of dividend policy.
Litzenberger and Ramaswamy (1979)	1936-1977 Monthly	MRA	Risk adjusted returns increase with increased dividend yields implying a non-desirability of dividends. A high return is necessary to induce purchase of high dividend stocks.
Rosenberg and Marathe (1979)	1931-1966 Monthly	MRA 2SLS	The dividend yield term is statistically significant—the tax rate on dividends is positive and returns on dividend paying stocks are increased. The lack of power of the Black and Scholes (1974) study is due to inefficient estimation procedures.
Litzenberger and Ramaswamy (1980)	1936-1977 Monthly	XSRA	Results support Elton and Gruber (1970) and Litzenberger and Ramaswamy (1979).
Gordon and Bradford (1980)	1926-1978 Monthly	MRA	Valuation of dividend and capital gains does not differ systematically. Results are consistent with price maximization but not increased tax liability. The findings suggest an irrational preference for dividends.
Green (1980)	1962-1977 Daily	XSRA TSRA	Dividend yield effects disseminate over time and are not just present on ex-dividend date. The study identifies potential sources of bias in use of the price drop to infer tax rates.

TABLE 3.2 (continued)

EMPIRICAL STUDIES PRICING THE TAX ON DIVIDENDS BY ADDING
A VARIABLE TO THE CAPITAL ASSET PRICING MODEL

Author(s)	Data	Method of Analysis	Major Result(s)
Blume (1980)	1936-1976 Quarterly	XSRA	Dividends are preferred to capital gains despite the increased tax liability. Average returns are approximately equal. This is explained by the possible failure by the market to anticipate the increase of dividends by high yield stocks.
Morgan (1982)	1931-1977 Monthly	MRA, OLS BJM	The abnormal return/dividend yield relation is consistent with Litzenberger and Ramaswamy (1979) findings but not with Miller and Scholes (1982). Different methods prevent comparisons but evidence suggests non-linear relations.
Litzenberger and Ramaswamy (1982)	1936-1980 Monthly	XSRA	Litzenberger and Ramaswamy (1979) model reformulated. Results support 1979 findings. Stock returns and expected dividend yields are positively correlated; the relation is non-linear.
Miller and Scholes (1982)	1940-1978 Monthly	XSRA	Short term dividend yields cannot be used to determine the tax liability differences of dividend and capital gains stocks. Tax effect and announcement effect confounded in earlier studies.
Hess (1982) (1983b)	1962-1979 Daily 1951-1980 Monthly	MRA	The studies finds a negative coefficient for the dividend pricing variable. Empirical results fail to support the existence of clienteles. Dividend yields likely proxy for expected return changes over time.

TABLE 3.2 (continued)

EMPIRICAL STUDIES PRICING THE TAX ON DIVIDENDS BY ADDING
A VARIABLE TO THE CAPITAL ASSET PRICING MODEL

Author(s)	Data	Method of Analysis	Major Result(s)
Auerbach (1983)	1963-1977 Daily	MRA	Tax-based clienteles exist and are relatively constant over time. Clienteles are strongly motivated by dividend/price ratios; largely unaffected by firm specific risk and other firm traits.
Elton, Gruber and Rentzler (1983)	1936-1976 Annual	MRA	Dividend yields and excess returns are positively related. The phenomenon is likely related to tax effects but other factors can influence the relation.
Ang and Peterson (1985)	1973-1983 Annual	XSRA	The role of dividends as a proxy for risk is examined using ex-ante data that increases tax and information effect confounding. A positive expected return/yield relation is demonstrated but the relation displays a large variance. Returns and beta are positively related; returns and size are negatively related.
Christie (1990)	1946-1985 Monthly	MRA	Zero dividend firms earn negative abnormal returns. The results conflict with Blume (1980). The findings cannot exclusively be attributed to the tax effect but could possibly be influenced by a dividend expectations effect.

¹ See Appendix A for method of analysis abbreviations.

than the amount of the dividend payment. The dividend/price decline differential is not pronounced. Later work (Durand and May, 1960) supports this finding but the discrepancies between the dividend payment amount and the price decline in this study of American Telephone and Telegraph common stock are also negligible. Marginal shareholders must be indifferent between holding the ex-dividend shares and the after tax dividend or owning the share before the dividend is paid (Elton and Gruber, 1970). This equality allows for indirect estimation of the shareholders' tax rates.

Table 3.3 summarizes empirical work relating the price change to dividend ratio around ex-dividend days. A positive tax rate is implied if the price change/dividend ratio is bounded by 0 and 1. Campbell and Beranek (1955), Elton and Gruber (1970) and Kaplanis (1986) find evidence that supports the tax clientele hypothesis. Other authors (Brooks and Edwards, 1980 and Kalay, 1982) question the method's ability to infer tax brackets due to the influence of short term trading activity and other confounding factors. Gagnon and Suret (1991) show that the return variance in most empirical study samples precludes tax rate inference and the consequent clientele estimation. Although the full impact of short term traders on ex-dividend day returns is not known, the impact of these investors has decreased as abnormal returns and transaction costs have decreased following the initiation of a negotiated commission structure (Finnerty, 1981, Eades, Hess and Kim, 1984 and Lakonishok and Vermaelen, 1986). Karpoff and Walkling (1988) are unable to demonstrate any correlation between transaction costs and ex-dividend day returns. The importance of transaction costs to the short term trader is discussed by Kalay (1982, 1984) and Elton, Gruber and

Rentzler (1984). Kalay (1982, 1984) asserts that transaction costs are not a major determinant of trading strategy and do not significantly affect short term trading activity because floor trader and specialist commission rates are not significant. Traders will exploit the arbitrage opportunities of the share price changes on ex-dividend day if the abnormal returns are large. On the other hand, Elton, Gruber and Rentzler (1984) refute Kalay's findings because of the underestimation of transaction costs. These authors believe that the transaction costs significantly affect trading profits to the extent that abnormal profit capture is not possible and short term trading activity effects are negated.

A third approach explores the effect a change in the capital gains/dividend tax differential has on the share price of dividend and non-dividend paying firms. According to the tax-adjusted model, a change in the tax rate should cause a change in the demand curve for dividends and a change in the pricing. Alternatively, no change in the pricing of dividends should occur under the tax-avoidance model.

Table 3.4 summarizes empirical analyses of this topic. In a study of stock returns before the introduction of federal income taxes in the United States, Barclay (1987) finds support for the tax-adjusted model since no tax clientele effect is present. Investor dividend preference is little affected by changes in the tax code (Crockett and Friend, 1988). Grammatikos (1989) reports that abnormal returns in high yield stocks have increased following the 1984 Tax Reform Act. Robin (1991) and Wu and Hsu (1992) find support for the tax clientele hypothesis in the period preceding and following the 1986 Tax Reform Act (1986 TRA). Conversely, Michaely (1991) and

TABLE 3.3

**EMPIRICAL STUDIES OF CHANGES IN PRICE DURING THE PERIOD
SURROUNDING EX-DIVIDEND DAYS**

Author(s)	Data	Method of Analysis ¹	Major Result(s)
Studies Using Price Change to Dividend Ratio			
Elton and Gruber (1970)	1966-1967 Daily	EG	Support M&M (1961) clientele effect; results suggest changes in dividend policy cause changes in shareholder wealth. Dividend yield and ex-dividend price drop are positively correlated. This study demonstrates a preference of highly (low) taxed investors for capital gains (dividends).
Long (1978)	1956-1976 Daily	Price _A /Price _B ratio	The study analyzes two classes of utility corporation stock differing only in dividend policy. Investors prefer cash dividends to stock dividends despite lower after tax returns.
Finnerty (1981)	1978 Daily	EG	Shareholders of electric utility companies prefer dividends to capital gains. Two types of investors are present in the market--taxable investors able to claim 85 percent interest deductions and investors seeking a high current income.
Kalay (1982)	1966-1967 Daily	Modified EG	Refines Elton and Gruber (1970) due to potential biases in original study. Results support the hypothesis that a higher dividend tax allows short term traders to make arbitrage profits.

TABLE 3.3 (continued)

EMPIRICAL STUDIES OF CHANGES IN PRICE DURING THE PERIOD
SURROUNDING EX-DIVIDEND DAYS

Author(s)	Data	Method of Analysis	Major Result(s)
Studies Using Price Change to Dividend Ratio (continued)			
Kaplanis (1986)	1979-1984 Daily	Option price changes	Supports clientele hypothesis; results inconsistent with short term trading hypothesis. Expected and actual differences are not significant.
Poterba (1986)	1965-1984 Daily	Price _A /Price _B ratio	Re-examines Long (1978) data. Stock dividend shares have higher returns- -a finding consistent with capital gain preference. The price decrease following cash dividend payment is less than the amount of the dividend.
Skinner and Gilster (1990)	1980-1985 Daily	EG	Other factors likely confound the findings of earlier studies (i.e. Elton and Gruber, 1970). The dividend clientele effect is likely an industry effect rather than a tax effect.
Sterk and Vandenberg (1990)	1984-1986 Daily	Price _A /Price _B ratio	In a study using Citizens Utilities stock (also used by Long (1978) and Poterba (1986), the authors find a dividend/capital gains tax differential premium exists but its effects are eclipsed by the shareholder's preference for cash dividends. Tax laws affect share value.

TABLE 3.3 (continued)

EMPIRICAL STUDIES OF CHANGES IN PRICE DURING THE PERIOD
SURROUNDING EX-DIVIDEND DAYS

Author(s)	Data	Method of Analysis	Major Result(s)
Studies Using Abnormal Positive Returns			
Eades, Hess and Kim (1984)	1962-1980 Daily	Modified EG	Capital gains/dividend tax differential incompletely explains ex-dividend day excess returns. Ex-dividend day returns decrease after negotiated commissions are allowed. Return distribution results support the tax-adjusted hypothesis.
Lakonishok and Vermaelen (1986)	1970-1981 Daily	ES	Test tax arbitrage using trading volume around the ex-dividend date. A significant increase volume is positively (negatively) related to dividend yield (transaction costs).
Bailey (1988)	1976-1983 Daily	Class _A /Class _B ratio	Cash dividend paying shares sell at a premium to stock dividend paying shares. Premiums are explained by changes in the relative value and trading costs. No evidence is shown for a cash dividend preference.
Karpoff and Walkling (1988)	1964-1985 Daily	XSRA OLS	Ex-dividend day returns are significantly affected by short term traders. This effect is primarily in high-yield stocks and has grown following negotiated commission introduction. Trading activities vary positively (negatively) with yield (costs).

TABLE 3.3 (continued)

EMPIRICAL STUDIES OF CHANGES IN PRICE DURING THE PERIOD
SURROUNDING EX-DIVIDEND DAYS

Author(s)	Data	Method of Analysis	Major Result(s)
Studies Using Abnormal Positive Returns (continued)			
Bajaj and Vijh (1990)	1962-1987 Daily	ES	The price reaction to a change in dividend policy is more pronounced in high yield stocks. The findings support the dividend clientele hypothesis. The small firm reaction is partially attributable to higher relative costs. Information and yield effects are confounded.
Karpoff and Walkling (1990)	1973-1985 Daily	ES	Ex-dividend day returns are positively related to bid-ask spreads. The relation is stronger in high yield stocks. Short term trading activity significantly affects abnormal returns.
Venkatesh (1991)	1988 Intraday	Modified EG	The ex-dividend day price decrease and trading volume increase is related to transaction costs. Trading activity decreases abnormal returns.
Stickel (1991)	1972-1980 Daily	ES	The study examines non-convertible preferred stocks. Increased liquidity is associated with decreased abnormal returns and increased increased volume. Transaction costs preclude short term trading profits.
Dubofsky (1992)	1962-1987 Daily	Modified EG	Market microstructure (specifically NYSE and AMEX trading rules) precipitate ex-dividend day abnormal returns.

¹ See Appendix A for method of analysis abbreviations.

Hearth and Rimbey (1992) find few changes in market activity following the 1986 TRA and little support for the tax clientele theory.

Following a sequence of tax reform acts in Canada, Khoury and Smith (1977), Morgan (1980), Amoako-Adu (1983) and Booth and Johnson (1984) find support for the tax-adjusted model using Canadian stock market data from the period preceding and following the changes in the tax law. Notwithstanding these findings, Lakonishok and Vermaelen (1983) report results more supportive of the short term trading hypothesis. The tax-adjusted model is also supported in studies using British data (Feldstein, 1970, Poterba and Summers, 1984 and Ang, Blackwell and Megginson, 1991).

Another approach uses direct examination of investor portfolios to test the tax clientele hypothesis. The tax-adjusted model predicts that certain subgroups of taxable investors will hold dividend paying stocks while the tax-avoidance model posits that only tax exempt investors and shareholders who are able to shelter the dividend income will hold dividend paying shares.

Blume, Crockett and Friend (1974) find an inverse relation between portfolio dividend yield and the investor's tax bracket. Although high income investors hold lower dividend paying stocks in their portfolios, the yield differences between the high income investor portfolios and the low income investor portfolios were less than the tax bracket differential. In a later investigation of individual brokerage accounts, Pettit (1977) finds that the large dividend/capital gains tax differential induces high tax bracket individuals to hold low yield issues. Portfolio dividend yields also increase as age and liquidity needs increase. A subsequent re-examination of the Pettit (1977) investor

TABLE 3.4

EMPIRICAL STUDIES OF CHANGES IN THE TAX LIABILITY OF DIVIDENDS

Author(s)	Data	Method of Analysis ¹	Major Result(s)
U.S. Tax Law Changes			
Barclay (1987)	1900-1910 Daily	EG	Examines stock price movements on ex-dividend day before federal income taxes. Results support the tax-adjusted hypothesis. No tax clientele effect is found. Dividend/capital gain taxation differentials affect individual portfolio choices. The value of the firm is affected by its dividend policy.
Crockett and Friend (1988)	1940-1985 Annual	TSRA OLS	Dividend payments cause significant tax liabilities. Investors are not indifferent between dividends and capital gains. Results are consistent with an after-tax preference for dividends. Tax law changes have little effect shareholder dividend preference.
Grammatikos (1989)	1975-1985 Daily	Modified EG ES	An increase in abnormal return on ex-dividend day follows the 1984 Tax Reform Act. The increase is found only in high yield stocks. Short term trading is inhibited by tax law changes.
Robin (1991)	1984-1988 Daily	ES	Supports the tax clientele hypothesis. A statistically significant decrease in ex-dividend day returns follows the 1986 TRA. Short term trading activity has also diminished.

TABLE 3.4 (continued)

EMPIRICAL STUDIES OF CHANGES IN THE TAX LIABILITY OF DIVIDENDS

Author(s)	Data	Method of Analysis	Major Result(s)
U.S. Tax Law Changes (continued)			
Michaely (1991)	1986-1989 Daily	Modified EG	Analyzes the ex-dividend day premiums before and after the 1986 TRA. The 1986 TRA has little effect on ex-day returns. Short term traders are mainly responsible for ex-day effects.
Givoly, Hayn, Ofer and Sarig (1992)	1983-1987 Annual	XSRA	Personal tax rates affect corporate capital structure decisions. The study finds indirect support for dividend clientele existence.
Hearth and Rimbey (1992)	1984-1988 Daily	EG, NP Tests	Results do not support the tax clientele hypothesis. Few significant changes in ex-day returns following the 1986 TRA.
Wu and Hsu (1992)	1984-1990 Daily	ES	Ex-dividend day premiums increase significantly after the 1986 TRA. Short term trading volume decreases due to the increase in corporate tax liability. Lower yield stock price changes are consistent with the tax clientele hypothesis. Ex-dividend day premiums on high yield issues are related to arbitrage trading.
Canadian Tax Law Changes			
Khoury and Smith (1970)	1962-1973 Annual	TSRA Means Test	Changes in taxation of capital gains induce changes in dividend policy. Canadian corporate dividend policy is dissimilar to U.S. corporate policy. Aggregate dividends depend on the capital gain/dividend tax differential.

TABLE 3.4 (continued)

EMPIRICAL STUDIES OF CHANGES IN THE TAX LIABILITY OF DIVIDENDS

Author(s)	Data	Method of Analysis	Major Result(s)
Canadian Tax Law Changes (continued)			
Morgan (1980)	1968-1977 Monthly	MRA, OLS, GLS	Dividend and capitals gains are almost perfect substitutes following the tax law changes in 1972 and were imperfect substitutes preceding the passage of the act. The change in substitutability is the result of the introduction of a tax on capital gains, an increase in the dividend tax credit or a combination of these factors.
Lakonishok and Vermaelen (1983)	1971-1972 Daily	Modified EG	Results are not compatible with Elton and Gruber (1970). Marginal shareholder dividend/capital gain valuation is not reflected in ex-dividend day price behavior. The short term trading hypothesis is supported. Ex-day price declines are smaller in Canada.
Amoako-Adu (1983)	1968-1978 Monthly	ES	Significant differences between the effects of tax reform on high yield and low yield stocks is demonstrated. Shareholders use personal tax liabilities to price stocks.
Booth and Johnston (1984)	1970-1980 Daily	EG	Shareholders prefer capital gains to dividends. The short term trading hypothesis is not supported by empirical findings. Weakly supports the dividend tax clientele hypothesis.

TABLE 3.4 (continued)

EMPIRICAL STUDIES OF CHANGES IN THE TAX LIABILITY OF DIVIDENDS

Author(s)	Data	Method of Analysis	Major Result(s)
British Tax Law Changes			
Feldstein (1970)	1953-1964 Quarterly	XSRA, OLS, GLS, IV, ALS	Changes in the tax rate affect dividend policy. 40-60 percent of the effect of the change ensues in the first year.
Poterba and Summers (1984)	1955-1981 Daily Monthly	XSRA, GLS	Results support the tax-adjusted model. Taxes are partially responsible for the positive dividend yield/stock return relation. The results support Litzenberger and Ramaswamy (1979, 1982) and conflict with Miller and Scholes (1982) and Gordon and Bradford (1980).
Ang, Blackwell and Megginson (1991)	1969-1982 Annual	Means Test	Taxes rates affect dividend payout levels and share valuation by investors. Stock dividend shares sell at a premium when compared to cash dividend shares if the tax liability of capital gains is lower. Cash dividends are preferred if tax liabilities are equal.

¹ See Appendix A for method of analysis abbreviations.

portfolios by Lewellen, Stanley, Lease and Schlarbaum (1978) finds little evidence of the tax clientele effect--rather, dividend paying shares are found in the portfolios of investors with differing tax liabilities.

A further group of studies attempts to determine if shareholders pay taxes on dividends. The tax-adjusted model predicts that tax payments will be made because pre-tax returns are grossed up due to potential investor awareness of the tax liability; the tax-avoidance model predicts that no taxes will be paid because non tax exempt investors will shelter the income. Feenberg (1981) finds that only 2½ percent of dividends are paid to individuals eligible to take the interest deduction proposed by Miller and Scholes (1978). Also, Peterson, Peterson and Ang (1985) report that shareholders pay considerable taxes on dividends and that they do not shelter their income. Other research shows that an increase (decrease) in the tax liability of dividends versus capital gains leads to a decrease (increase) in aggregate dividends in the United States (Lent, 1948 and Brittain, 1966), Canada (Khoury and Smith, 1977) and Great Britain (Feldstein, 1970).

3.2.3 Summary

Transaction costs, tax differentials, and heterogeneous shareholder expectations should induce a capital gain preference if firms are following an optimal investment strategy (Lintner, 1962). Stiglitz (1981) and Modigliani (1982) assert that corporations acting in the shareholder's best interest should pay zero dividends if capital gains tax liability is less than dividend tax liability. However, corporations continue to pay dividends despite their apparent liabilities. This is not completely unexpected. General

equilibria of standard finance models demand that prices adjust upward to induce firms to make taxable distributions (DeAngelo, 1991).

The underlying tax structure significantly affects corporate dividend policy. Empirical analysis of these effects better support the tax-adjusted model than the alternative tax-avoidance model. Under the tax-adjusted model, high dividend yield stocks with high tax liabilities are priced to increase the pre-tax expected returns. The theory that rational shareholders require a higher return from dividend paying shares is logically consistent.

Positive support for the dividend clientele hypothesis is shown by the differences in ex-dividend day return performance of high yield and low yield stocks (Haugen and Senbet, 1986). However, the proportion of non-dividend paying stocks is much smaller than expected if the majority of investors are subject to the tax liabilities associated with dividends.

3.3 THEORETICAL EXPLANATION BASED ON INFORMATIONAL ASYMMETRIES

The market imperfection of asymmetric information is the basis for three distinct efforts to explain corporate dividend policy. The mitigation of the informational asymmetries between managers and owners via unexpected changes in dividend policy is the cornerstone of dividend signaling models. Agency cost theory uses dividend policy to better align the interests of shareholders and corporate managers. The free cash flow hypothesis combines attributes of both the signaling and agency costs

paradigms; the payment of dividends can decrease the level of funds available for perquisite consumption by corporate managers.

3.3.1 Signaling and the Information Content of Dividend Hypothesis

In their seminal work, M&M argue that the share price is independent of dividend policy--the value of a share reflects both the future cash flow stream and future growth opportunities. M&M acknowledge that dividend changes influence stock prices and attribute this phenomenon to the "information content of dividends". A stock price change resulting from a change in dividend payout due to the informational content of dividends represents differences in the private information known by corporate managers and the information available to the public. Only unexpected changes in dividend levels and the release of new information should affect stock prices under perfect market assumptions.

Corporate managers hold private information concerning the firm's future value. Managers are motivated to release this information to investors but must do so indirectly to prevent competing firms from profiting from the release. The signal of this information must be credible--i.e. costly to prevent false signaling by other firms in the marketplace. If managers have information that is not known by the public and an incentive to release this information indirectly, they can relay this information to shareholders through unexpected changes in dividend policy (Myers and Majluf, 1984).

This price reaction to announcement of changes in dividend policy is rational (Myers, 1987). The dividend information message of unobservable true earnings foreshadows expected future earnings. The market price of the shares should increase

(decrease) from the raised (lowered) expectations. Communication of managerial expectations using dividends is less ambiguous than earnings announcements since dividend policy is solely at the discretion of management. A reluctance on the part of managers to reduce dividends is a necessary condition for dividend use as a credible signal (Kalay, 1980).

The results of early empirical attempts to support the information content of dividends hypothesis are ambiguous. Separate studies by Fama, Fisher, Jensen and Roll (1969), Pettit (1972,1976), Griffin (1976) and Laub (1976) show positive (negative) excess returns accruing following unexpected dividend increases (decreases). Works by Ang (1975) and Gonedes (1978) fail to support the premise while Watts (1973) finds that transaction costs preclude excess return capture by market participants. Charest (1978) reports that earnings announcement and dividend announcement effects are confounded. Inconsistencies in the results can be traced to differences in data, sample period, methods of analysis and model misspecification. Table 3.5 is a summary of these works.

3.3.1.a Theoretical Signaling Models

Akerlof's (1970) model of the used car industry as a pooling equilibrium in the absence of signaling activities illuminates the costs of informational asymmetries. The generalization of Akerlof's model by Spence (1974) became the prototype for all financial models of signaling. The model defines a unique and specific signaling equilibrium in that market participants seeking employment in a world of uncertainty and asymmetric information rely on signals of their quality rather than reputation

TABLE 3.5

EARLY EMPIRICAL TESTS OF THE INFORMATION CONTENT OF DIVIDENDS HYPOTHESIS

Author(s)	Data	Method of Analysis ¹	Major Result(s)
Fama, Fisher, Jensen and Roll (1969)	1927-1959 Monthly	ES TSRA	Changes in dividends are assumed to signal changes in long run managerial expectations. Increased prices are associated with concurrent stock splits and dividend increases; decreases if dividends decrease. Markets adjust rapidly to the information.
Pettit (1972)	1964-1969 Daily	ES XSRA	Dividends relay significant new information of managerial estimates of earning power. Moderate dividend increases are associated with favorable market movements; large and small increases don't affect returns; all decreases in dividends reduce returns. Prices react rapidly. Dividend announcements relay more information than earnings announcements.
Watts (1973)	1946-1965 Monthly	XSRA OLS	The positive effects have no economic value since transaction costs erase abnormal returns. Only inconsequential differences in the six month performance of firms are seen following dividend increases or dividend decreases. The results can be confused by noise and confounding effects.
Ezell (1974)	1966-1970 Annual	MRA	Formation of expectations of dividend and earnings levels impacts the informational content of dividends.
Ang (1975)	1966-1971 Quarterly	Cross spectral analysis	Results fail to support the informational content of dividends. Short run earnings and dividends are highly correlated implying that dividend policy is not entirely a residual decision.

TABLE 3.5 (continued)

EARLY EMPIRICAL TESTS OF THE INFORMATION CONTENT OF DIVIDENDS HYPOTHESIS

Author(s)	Data	Method of Analysis	Major Result(s)
Griffen (1976)	1968-1973 Monthly	XSRA ES	Earnings, dividends, and earnings forecasts jointly significantly affect security returns. Analysts' forecasts and dividend changes (especially decreases) carry unique information.
Laub (1976)	1946-1965 Annual	MRA	Refutes Watts (1973) due to incorrect analysis of the empirical results. The results support the release of future earning prospects information via dividends. Watts (1976a) rebuts these findings.
Petitt (1976)	1946-1965 Monthly	MRA	Review of Watts (1973) method of analysis. Dividend changes relay relevant information. Watts (1976b) argues that Petitt's model is misspecified and results are confounded by external effects.
Charest (1978)	1962-1969 Daily	ES	Stock prices increase (decline) following dividend increase (reduction) announcements. Significant abnormal returns accrue in the months following the announcement of a change in dividend policy. The study does not segregate dividend and earnings announcement effects; dividend announcements do not necessarily transmit information.
Gonedes (1978)	1946-1972 Annual	XSRA	The results do not support the dividend information hypothesis. Unexpected dividend changes provide little additional information to the market--shareholders already have all pertinent information.

¹ See Appendix A for method of analysis abbreviations.

acquisition to find positions. Although formulated in the job market, Spence believes that findings can be extended to a limited number of other settings (admissions procedures, promotions, and credit application). A necessary condition for signaling to be successful is an inverse relation between a signal's costs and true productivity--relative costs are higher for inferior workers to signal. The signaling mechanisms must be controlled, must be able to be modified by the signaler, and must be costly. Since managers cannot determine a worker's quality through observation, a high quality worker signals his value through additional education resulting in higher pay. A similar model is formulated for the insurance market (Rothschild and Stiglitz, 1976). The general sufficient conditions for a signaling equilibrium to exist are formalized by Riley (1979).

Numerous theoretical financial models of signaling have been formulated to explain how managerial activities attempt to reduce the information asymmetries between corporate shareholders and managers. These include share repurchases (Stewart, 1976, Vermaelen, 1981 and Barclay and Smith, 1988), ownership equity proportion (Leland and Pyle, 1977), capital structure (Ross, 1977), convertible bond conversion (Harris and Raviv, 1985), insider trading (Damodaran and Liu, 1993) and models with dual signals of the insider trading activity occurring around other corporate signaling activities (John and Mishra, 1990 and John and Lang, 1991). Signaling models of corporate dividend policy are formalized by Bhattacharya (1979,1980), Talmor (1981), Hakansson (1982), John and Williams (1985), Miller and Rock (1985), Bar-Yosef and Huffman (1986), Makhija and Thompson (1986), Ambarish, John and

Williams (1987), Ofer and Thakor (1987), Kumar (1988), Kale and Noe (1990) and Rodriguez (1992).

The majority of financial theorists believe that signaling via corporate dividend policy has a lower cost than alternatives that would accomplish the same result. If less costly alternatives are available, prudent corporate managers would choose these alternatives rather than dividend policy to signal their inside information (Ambarish, John and Williams (1987) and Ofer and Thakor (1987)). The use of dividends as signals implies that alternative methods of signaling are not perfect substitutes (Asquith and Mullins (1986)).

The dividend signaling model developed by Bhattacharya (1979) is descended from Ross (1977). In this model of an all equity firm, a higher dividend payment per share implies a higher firm value. Unexpected increases in dividends are favorable signals relaying unique information of managements' expectations of future cash flows. The costs associated with dividend payments--the opportunity costs of the use of internal funds or the transaction costs associated with external financing--make the signal costly for firms lacking positive information to imitate. Unlike Spence (1974), the costs of signaling occur in the future while the firm benefits from the strategy during the current period. The increase in share value associated with the signal offsets the shareholders' tax liability from dividend income. In this environment, closely held firms are likely to pay higher dividends to communicate their value to outside shareholders because information availability is constrained in closely held firms. If

the least profitable firms pay zero dividends, the dividend and earnings relation will be linear. The model's predictions are supported by Brittain (1966).

Bhattacharya (1980) extends the model to a two-period intertemporal setting while Talmor (1981) augments the model using a multivariate signaling paradigm with multiple valuation parameters and signaling mechanisms. In Talmor's model, managers make several financing decisions simultaneously. The firm's management considers all financial decisions as a single operation even if the individual activities are not explicitly recognized by the shareholders as signaling vehicles. Makhija and Thompson (1986) define the least profitable firm differently than Bhattacharya (1979) in their extension of the model. If all firms have non-zero earnings, the dividend/earnings relation will be nonlinear. To ensure equilibrium existence, the dividend policy of the most profitable firms must be constrained and additional limiting conditions likely have to be imposed.

A signaling equilibrium will exist only if firm quality dispersion is limited in the extension of the Bhattacharya (1979) model developed by Rodriguez (1992). If a cash flow range is specified for each firm, an upper bound on firm quality distribution exists; an equilibrium is not feasible beyond the bound. If the lowest quality firms have zero cash flows, dividends will increase linearly with firm quality in equilibrium. If some firms pay excess dividends due to the wide distribution in firm quality, an equilibrium is not likely. Dividend signaling levels in equilibrium are an increasing function of the firms' differences in quality (consistent with Ofer and Thakor, 1987).

An equilibrium with homogeneous shareholder beliefs and efficient markets precludes the use of dividend policy to signal (Hakansson, 1982). Increased market efficiency via private information dissemination through corporate dividend policy will occur provided one of three sufficient conditions are met--shareholders have heterogeneous probability assessments, markets are incomplete, or investors have different consumption allocations over time. The three are not mutually exclusive. In this model, the information content of a change in dividend policy is a significant but the signaling function alone cannot explain dividend persistence. Unexpected changes in dividends convey private information of expected future payoff patterns. The release of information through dividend policy changes proxies for additional financial markets. The model only discusses gains in shareholder welfare from dividend payments; it does not explain how investors induce managers to pay dividends or the preference for cash dividends.

John and Williams (1985) develop a signaling model with multiple equilibria using the assumption that firms with unique private information will receive varied marginal benefits following changes in dividend policy. The model is developed in an adverse environment where only dividends are taxed. Managers' expectations of future returns are signaled. An increase in dividends increases share price--consistent with the goal of shareholder value maximization (this goal differs from Bhattacharya, 1979). Information dissemination cause a premium to be offered by investors for dividend paying shares that offsets the costs of the signaling--increased shareholder tax liabilities and constrained firm liquidity. In equilibrium, firms with more favorable information

pay higher dividends and are consequently more highly valued by investors. Firms with lower cash flow levels pay dividends no greater than firms with higher expected cash flows. Dividend clienteles exist in this model. Although modeled in a world with unfavorable market conditions, an equilibrium exists with dissipative dividends. The firm's efficient equilibrium is determined by internalizing the investment decision.

Miller and Rock (1985) model a net dividend concept--the unexpected net dividend is determined by subtracting external financing from the total dividend paid--to signal expected current earnings information that implies future earnings levels. The model combines dividends and external financing that are stylized as different sides of the same coin. The signal of current earnings differs from the models of Bhattacharya (1979) and John and Williams (1985). The cost of the signal in the model is a non-optimal investment policy--the payment of dividends uses cash that could otherwise be used for investment opportunities. Earning, dividend and financing announcements are closely related and dividends and earnings announcements are perfect substitutes if the model's assumptions are met. Unexpected increases in dividends provide increases in shareholder wealth.

The assumption of a managerial incentive reward/penalty policy underlies the signaling model developed by Bar-Yosef and Huffman (1986). In this equilibrium, dividends increase as managerial expectations of cash flow increase but the marginal effect of cash flows on dividends decreases as cash flows increase. Consistent with Leland and Pyle (1977), higher levels of uncertainty are present in firms with lower

dividend payout ratios. Unlike Bhattacharya (1979) interest rate effects on dividend payment levels are indeterminate.

Ambarish, John and Williams (1987) generalize the models of Myers and Majluf (1984), John and Williams (1985) and Miller and Rock (1985). In this model, dividends are less efficient than other methods (investment policy, share repurchase and equity issues) of releasing private information to the market. The private information known to managers is communicated through combinations of changes in dividend and investment policies or changes in dividend policy and new equity issue or share repurchase announcements. If all private information can be conveyed via an alternative signaling venue, relaying information through changes in dividend policy is redundant. Dividends exist in this equilibrium only if the cost of using multiple signaling mechanisms is less than using individual vehicles. The tax liability of dividend payment is the cost of signaling. The use of two corporate policy decisions minimizes the costs associated with signaling.

In Ofer and Thakor (1987), both dividends and stock repurchases are used as signals. The difference in costs of the two approaches precludes their substitutability. In addition to the financing costs associated with dividend payments, share repurchases have the additional cost of increasing managerial risk due to the proportional increase in managerial ownership following a repurchase. It follows that share repurchases disseminate more information due to their higher cost. Dividends are used to signal small market underpricings of the firm while repurchase is reserved for periods when

the stock is significantly underpriced due to the cost differential between the two methods.

The ability to use a multivariate signal does not preclude the use of a single signal. In the model developed by Hausch and Seward (1993), cash distributions are assumed to signal changes in managerial expectations of firm potential. Two types of distribution policies exist, a deterministic policy with known, declared amounts of cash payments (dividends) and a stochastic policy characterized by a firm's precommitment to pay an unspecified amount of cash (share repurchases). Each alternative has distinct signaling properties and the distribution's size and the announcement effect's magnitude are uncorrelated. If firms have identical production possibilities but dissimilar cash levels, firms with decreasing absolute risk aversion are more likely to hold higher levels of cash and have a lower relative cost of stochastic disbursement. High quality firms can distinguish themselves from low quality firms by their choice of distribution policy.

A corporation's prospects can only be partially revealed using dividend policy because the payment stream is routinely smoothed by managers; changes in dividend policy are only a rough signal of future expected earnings. Kumar (1988) models a rational expectations signaling equilibrium in that dividends convey only broad information of changes in a firm's prospects. The model implies that although dividend increases (decreases) signal important positive (negative) information about the firm's prospects, dividends are a poor predictor of corporate earnings due to the smoothing process applied by managers.

In a two-period model developed by Kale and Noe (1990), dividend increases signal increased future cash flow stability and decreased riskiness of the cash flows. In the model, dividends are positively correlated with share price returns and are inversely related to expected cash flow variance and underwriting costs.

3.3.1.b Empirical Tests of the Informational Content of Dividends Hypothesis

Empirical tests of the information content of dividend hypothesis are largely supportive of the theory. A large number of studies using diverse sample periods find that unexpected changes in dividend policy relay information and the information released by a change in dividend policy is not trivial. The magnitude of the price change associated with unexpected decreases in dividend payouts is greater than the change following unexpected increases and is positively related to the excess returns and trading volume associated with the change. Earnings and dividend announcements are not perfect substitutes; each convey unique information. Changes in regular dividends provide more information than special dividends. A size effect (more pronounced reactions following dividend changes by smaller firms) due to the decreased level of small firm information available to the market is shown. Results can be confounded by ex-dividend/announcement effects, wealth transfers and decreases in profitable investment opportunities. A summary of the empirical studies supporting the information content of dividend hypothesis is found in Table 3.6.

Several studies show results that contrast with the previous findings and that are inconsistent with the information content of dividend hypothesis/signaling models. The impact of an unexpected and substantial change in dividend policy is more diverse and

TABLE 3.6

EMPIRICAL TESTS SUPPORTING THE INFORMATION CONTENT OF DIVIDEND HYPOTHESIS

Author(s)	Data	Method of Analysis ¹	Major Result(s)
Aharony and Swary (1980)	1963-1976 Daily	ES	Separates earnings and dividend announcement effects. Each conveys unique information and are associated with significant abnormal returns. Negative announcement effects are stronger. Results strongly support the information content hypothesis.
Kalay (1980)	1956-1975 Annual	Dividend change analysis	The Ross (1977) model is applied to corporate dividend policy and finds an indefinite evidence of managerial reluctance to decrease dividends. The few cases of forced dividend reduction imply that the information content of dividends cannot be rejected analyzing dividend decreases.
Kwan (1981)	1973-1977 Quarterly	ES	Extends Watts (1973) with an modified Lintner (1956) and Fama and Babiak (1968) model. The information is non-trivial.
Woolridge (1982)	1970-1977 Daily	ES	Positive (negative) debt and preferred stock returns result from unanticipated increases (decreases) in dividends. Signaling is the main influence on security prices but wealth transfer and confounding effects cannot be ruled out.
Eades (1982)	1960-1979 Monthly Daily	MRA ES	Signaling is more effective in lower risk firms. The negative correlation between yield and variance implies more information is released by a change in dividend policy in a low risk firm. Results support the information hypothesis.

TABLE 3.6 (continued)

EMPIRICAL TESTS SUPPORTING THE INFORMATION CONTENT OF DIVIDEND HYPOTHESIS

Author(s)	Data	Method of Analysis	Major Result(s)
Woolridge (1983)	1971-1977 Daily	ES NP Tests	Dividend change announcements convey information; the unexpected dividend change/abnormal return relation is significant. If anticipated, no additional information is released.
Asquith and Mullins (1983)	1964-1980 Daily	ES	Initial dividend announcements result in significant positive excess returns and increased investor wealth. Subsequent dividend increase announcement effects are greater than initiation or resumption announcement effects. Dividend announcements relay unique information.
Brickley (1983)	1969-1979 Daily	ES	Regular dividend announcement effects are greater and more permanent than those associated with special dividends. Both announcements convey positive information. Dividend increases or special dividends precede earnings decreases.
Divecha and Morse (1983)	1977-1979 Daily	ES	The increase in share price is directly proportional to the magnitude of of the dividend increase announcement. The results are consistent with the information hypothesis but the results are likely confounded by effects from a perceived decrease in profitable investment opportunities.
Penman (1983)	1968-1973 Annual	TSRA Means Test	Managers increase earnings forecasts rather than increase dividends; dividend decreases are not associated with decreases in earnings. Dividend announcements carry information but less effectively than earnings announcements if small.

TABLE 3.6 (continued)

EMPIRICAL TESTS SUPPORTING THE INFORMATION CONTENT OF DIVIDEND HYPOTHESIS

Author(s)	Data	Method of Analysis	Major Result(s)
Kane, Lee and Marcus (1984)	1979-1981 Daily	ES MRA	Earnings and dividend announcement individual effects and interactions result in abnormal returns. Earnings and dividend announcements are not perfect substitutes.
Handjinicolaou and Kalay (1984)	1975-1976 Daily	ES	Bond price changes around dividend announcement support the dividend information hypothesis. The information conveyed is the expected future profitability of the firm. Decreases in dividends negatively affect bond prices; increases have no effect on bond prices.
Benesh, Keown and Pinkerton (1984)	1971-1978 Daily	ES	Anticipated dividend omissions and large decreases depress stock prices. Initiations of dividends are associated with significant positive returns. Reaction to unfavorable announcements is more significant. Results strongly support the informational hypothesis.
Dielman and Oppenheimer (1984)	1969-1977 Daily	RCRA	Random coefficient results support the information content hypothesis. Dividend change announcements alter shareholder expectations. The price adjustment is protracted over the month following the announcement.
Kalay and Lowenstein (1985)	1962-1980 Daily	ES	Positive net announcement effects. Excess returns accruing during the announcement period partially compensate investors for the increase in variance and systematic risk during the period.

TABLE 3.6 (continued)

EMPIRICAL TESTS SUPPORTING THE INFORMATION CONTENT OF DIVIDEND HYPOTHESIS

Author(s)	Data	Method of Analysis	Major Result(s)
Eades, Hess and Kim (1985)	1962-1980 Daily	ES	The market's response to dividend announcement is lagged due to announcement effect and ex-dividend effect confounding. No lag occurs if the ex-dividend effect is controlled for. The reaction to the dividend information effect is overly optimistic.
Asquith and Mullins (1986)	1964-1980 Daily	ES	Dividend initiation produces positive excess returns. The magnitude of the dividend is positively correlated with the size of abnormal return. The returns are larger than the dividend/capital gains tax differential. Subsequent increases are also associated with positive excess returns.
Kalay and Lowenstein (1986)	1979-1981 Daily	ES	Managers select earnings/dividend announcement dates to impact returns. Return decreases following delayed dividend decrease announcement are more pronounced.
Richardson, Sefcik and Thompson (1986)	1969-1982 Daily	XSRA	Significant positive returns are associated with dividend initiation. Increases in trading volume from future earnings represent more than a change in shareholder clientele. The findings support the information hypothesis. Trading volume and dividend changes are positively related.
Ofer and Siegel (1987)	1976-1984 Daily	MRA, IV	Tests dividend signaling hypothesis using earnings forecast error and dividend change correlation. A change in dividend policy relays information to the market--analysts revise earnings forecasts following a change in dividend policy.

TABLE 3.6 (continued)

EMPIRICAL TESTS SUPPORTING THE INFORMATION CONTENT OF DIVIDEND HYPOTHESIS

Author(s)	Data	Method of Analysis	Major Result(s)
Healy and Palepu (1988)	1954-1963 1969-1982 Quarterly	XSRA	Increased (decreased) earnings are associated with dividend initiation (omission). Positive (negative) earnings are documented one year prior and post dividend initiation (omission). Changes provide additional information on future earnings.
Eddy and Seifert (1988)	1983-1985 Daily	ES	Larger dividend increases more significantly affect small firms. A significant size/price reaction relation is shown.
Fehrs, Benesh and Peterson (1988)	1980-1984 Daily	ES	Excess return is positively (negatively) correlated with security yield if dividends are increased (decreased). Reaction is conditional on yield.
Damodaran (1989)	1981-1985 Daily	EPS/DPS analysis NP Tests	Friday earnings and dividend announcements tend to be more negative. Smaller firms are affected more. The weekend effect is not related to earnings and dividend announcements.
Venkatesh (1989)	1972-1983 Daily	NP Tests	Dividend information proxies for earnings announcement information following dividend initiation. The findings support the signaling hypothesis. Volatility decreases follow dividend initiation implying less uncertainty following initiation.
Manakyan and Carroll (1990)	1979-1983 Quarterly	NP Tests GC Test	Dividends signal reliability and precede unexpected earnings changes and changes in short term firm performance. The consistency of earnings changes and dividend changes imply that earnings cause dividend changes.

TABLE 3.6 (continued)

EMPIRICAL TESTS SUPPORTING THE INFORMATION CONTENT OF DIVIDEND HYPOTHESIS

Author(s)	Data	Method of Analysis	Major Result(s)
Easton (1991)	1978-1980 Semi-annual	MRA	Using Australian data, interaction between earnings and dividend effects announcement effects is shown. The interaction is independent of the timing of the announcements.
Wansley, Sirmans, Shilling and Lee (1991)	1973-1986 Daily	ES XSRA	Although significant abnormal returns are associated with both positive and negative changes in dividends, the effects are more pronounced in dividend decreases. The effect is magnified if current earnings are not known. No earnings predictability or percent change in earnings/dividend announcement effect relation is found. Late announcements of dividend decreases are anticipated by the market and have little effect. Information content is positively correlated with the size of the change.
Ghosh and Woolridge (1991)	1962-1984 Daily	ES	The first dividend omission is associated with significant negative returns; subsequent omission effects are insignificant (consistent with Kalay and Lowenstein (1985) and Eades, Hess, and Kim (1985)). Prices react to unanticipated announcements only.
Shrader and Milkman (1991)	1987-1988 Daily	ES	Dividend increases signal increases in future cash flow expectations or alternatively, decreases in growth opportunities. Low growth firms have abnormal returns following increases in dividends; high growth firms have no excess returns.

TABLE 3.6 (continued)

EMPIRICAL TESTS SUPPORTING THE INFORMATION CONTENT OF DIVIDEND HYPOTHESIS

Author(s)	Data	Method of Analysis	Major Result(s)
DeAngelo, DeAngelo and Skinner (1992)	1980-1985 Annual	LOGIT NP Tests	Earnings levels increase the predictability of dividend decreases in firms with losses. The results support the information content of dividend hypothesis. An annual loss is a necessary but not sufficient condition for a dividend decrease to occur in firms with established records of dividend payouts. The change in dividend policy following negative earnings is more pronounced.
Eddy and Seifert (1992)	1983-1985 Daily	ES	The combined dividend/earnings announcement effect is greater than the reaction to one announcement (approximately doubled). Joint announcements convey more information. No significant reaction is documented when contradictory signals.
Kao, Wu, and Lin (1992)	1965-1990 Quarterly	TOBIT	Dividends are customarily smoothed by managers; non-systematic changes in dividend policy signal unexpected earnings changes. Unexpected changes in dividend policy and changes in future earnings forecasts are positively related.
Kim and Viswanath (1992)	1971-1980 Daily	ES	The market's reaction to dividend changes increase costs. Dividend policy is matched to permanent earnings levels. Signaling is supported.
Schatzberg and Datta (1992)	1963-1988 Daily	ES NP Tests	An information hypothesis/weekend effect relation is not seen.

TABLE 3.6 (continued)

EMPIRICAL TESTS SUPPORTING THE INFORMATION CONTENT OF DIVIDEND HYPOTHESIS

Author(s)	Data	Method of Analysis	Major Result(s)
Wong and Swindle (1992)	1970-1986 Daily	NP Tests	Dividend initiation does not decrease information acquisition costs. Earnings announcement effects are not decreased by dividend initiation (contrasts with Venkatesh (1989)). The volatility decrease is due to the decrease in volume, not in information asymmetry.
Gu and Clayton (1993)	1982-1986 Quarterly	ANOVA RBD	Most firms show a positive relation between increased cash flows and signaling. Not all dividend changes are accurate signals. Small and medium changes in dividend policy are accurate; large changes are more likely to be false signals. The signal conveys the stability of future cash flows.

¹ See Appendix A for method of analysis abbreviations.

of greater complexity than signaling models predict. Managerial subjectivity in the estimation of earnings likely cause inaccuracies in future earnings prognostications and severely limit the usefulness of the private information released through changes in corporate dividend payout levels. The decrease in the earnings growth rate of firms following the announcement of the change in policy is also inconsistent with theory predictions. Further, the wide variance in excess return distributions associated with changes in policy is not compatible with the models' predictions.

Frankfurter and Gong (1992) provide the only direct test of a signaling model by examining the model developed by John and Williams (1985). In their analysis, the authors show that liquidity demands and dividend payments are negatively correlated; these results are diametrically opposed to the model's predictions. Shareholder liquidity requirements partially determine firm dividend policy. Share prices increase (decrease) and trading volumes decrease (increase) following dividend increases (decreases). The categorization of the results of these studies is presented in Table 3.7.

3.3.1.c Summary

The only direct test of a signaling model (Frankfurter and Gong, 1992) is unable to find empirical support for the theory. Crockett and Friend (1988) conclude that the John and Williams (1985) model prediction that zero dividend firms have little investment capital and cash flows instead of capital constraints is improbable. Managerial imposition of costs on remaining shareholders to benefit sellers of the shares is irrational. In the model developed by Miller and Rock (1985), increased dividends can release misinformation that benefits selling shareholders; a conclusion in

TABLE 3.7

EMPIRICAL TESTS NOT SUPPORTIVE OF THE INFORMATION CONTENT OF
DIVIDEND HYPOTHESIS AND SIGNALING MODELS

Author(s)	Data	Method of Analysis ¹	Major Result(s)
Riding (1984)	1974-1979 Monthly	RRA ES	No information effects from dividend or earnings announcements are found in dividend decreases of greater than 20 percent.
Born, Moser and Officer (1988)	1962-1985 Daily	ES MRA	Dividend policy is relevant--the market reacts to unexpected changes in policy. Dividend increases are followed by increases in the earnings growth rate. Abnormal returns and dividend increase magnitude are positively related but only consistent increases raise share price. Dividend policy effects are more complex than modeled by signaling models.
McCann and Webb (1992)	1975-1987 Daily	ES MRA	The earnings growth rate decreases following dividend initiation announcement, contrary to dividend signaling hypothesis prediction. Initiations signify the coming of age of firms and lower capital costs due to increased capital market accessibility.
Frankfurter and Gong (1992)	1986-1990 Daily	ES	Tests John and Williams (1985) and fails to support the model; liquidity demands and dividend payments are negatively correlated. Shareholder liquidity requirements partially determine firm dividend policy. Dividend increases (decreases) cause increases (decreases) in share price and decreases (increases) in share volume. The positive relation between dividend change and price change is significant in small firms only.

¹ See Appendix A for method of analysis abbreviations.

contradiction with behavior rationality. In addition, consistent underinvestment by management would make the firm a target for takeovers. Brennan and Thakor (1990) assert that the choice of cash distribution method cannot depend solely on information asymmetries because share price is not an absolute composite of private information due to the costs involved with information collection.

On the other hand, the majority of empirical tests of the information content of dividend support the hypothesis--unexpected changes in dividend policy result in excess returns. The results are not without possible inadequacies, however, because they are partially driven by other events. Methods of analysis are likely less than appropriate. The arbitrary assignment of a dividend change as unexpected (defining unexpected by the magnitude of the change) and the length of the event window used in excess return determination likely bias the results.

Miller (1987) reviews Riley's (1979) sufficient conditions for a signaling equilibrium concentrating on their application in a financial setting. He concludes that its adaption to financial modeling is difficult if not impossible. The costs associated with signaling in finance are for the most part opportunity costs--departures from optimal investment strategies under full information conditions. The existence of benefits from signaling are obvious--what the benefits are specifically and who they benefit are not. Financial researchers differ in their opinions of what is being signaled; the permanence of past earnings (Lintner, 1956 and Fama and Babiak, 1964), a more precise measure of current earnings (Watts, 1973, Gonedes, 1978 and Miller and Rock, 1985) or future earnings expectations (Marsh and Merton, 1986). Grundy (1991) shows

that the models developed by John and Williams (1985) and Miller and Rock (1985) fail to satisfy Riley's (1979) conditions if negative investments, prices, or quantities are possible.

The ability of changes in dividend policy to serve as signals of private managerial information will likely never be fully understood due to misapplication of the model. Spence (1973) writes that his signaling model is not likely to be representative of many markets because of the different informational structures in those markets. The leap from the specific model developed by Spence to the theoretical financial signaling models of the last decade is likely to have been inappropriate given the original model's assumptions.

The questions of what dividends signal, how they signal, and why less expensive methods are less successful in communicating private information have not been conclusively answered. Signals are "self-verifying"--the mechanism is believable only if the message is reasonable and accurate. Messages relayed through changes in dividend policy are often ambiguous--insolvent firms are liquidated via dividends following changes in dividend policy (Easterbrook, 1984).

Signaling cannot totally explain the continued existence of dividends. The assumption that dividend payments in excess of optimal levels are partially explained by signaling is simple; proving this assumption is far more difficult since other factors determine policy (Miller, 1987). The price reaction is evidence of the capacity for signaling. If dividends are changed solely for the purpose of signaling firm specific information, then fluctuations in aggregate dividends should be stochastic and

insignificant in magnitude. If altered for any other reason, then the lack of information makes dividends useful in measuring the firm's information content in dividend announcements (Marsh and Merton, 1987). Managers' preference of using cash dividend policy to signal rather than less expensive alternatives lacks a reasonable explanation (Feldstein and Green, 1983 and Thakor, 1989). If managers are not attempting to relay information through dividend policy, other dissipative methods of cash disbursement are available and should be utilized to ensure shareholder wealth maximization (Myers, 1987). Future research efforts will likely be more successful in explaining why dividends cannot be used as signals rather than why they can (Miller, 1987).

3.3.2 Agency Cost Theory

The recognition of potential agency costs associated with the separation of management and ownership is not new; differences in managerial and shareholder priorities have been recognized for over three centuries. Adam Smith (1937) adjudged the management of early joint stock companies to be negligent in many of their activities. These problems were especially prevalent in the British East Indies Company and attempts to monitor managers were largely unsuccessful due to inefficiencies and costs associated with shareholder monitoring (Kindleberger, 1984). Scott (1912) and Carlos (1992) question these assertions--while control and organization were less than ideal, the continued success and long life of the corporation implies general sound managerial practices. Although some fraud no doubt existed, the majority of managerial activities coincided with shareholder desires.

Modern agency theory seeks to explain corporate capital structure as the result of attempts to minimize the costs associated with the separation of corporate ownership and control. Agency costs are lower in firms with high managerial ownership stakes due to the better alignment of shareholder and manager goals (Jensen and Meckling, 1976) and in firms with large block shareholders that are better able to monitor managerial activities (Shleifer and Vishney, 1986). Agency problems result from informational asymmetries, potential wealth transfers from bondholders to stockholders through the acceptance of high risk and high return projects by managers, and failure to accept positive net present value projects and perquisite consumption in excess of the level consumed by prudent corporate managers (Barnea, Haugen and Senbet, 1981).

Dividend policy influences these relations in two ways. Fama and Jensen (1983a, 1983b) espouse that potential shareholder and bondholder conflicts can be mitigated by covenants governing claim priority. These orderings can be circumvented by large dividend payments to stockholders. The payment of large dividends to shareholders can also result in the rejection of positive net present value projects and misuse of low-cost capital (Myers, 1977). Debt covenants to minimize dividend payments are necessary to prevent bondholder wealth transfers to shareholders (John and Kalay, 1982). Although potentially substantial in their precipitation of agency costs, dividend policy is not a major source of bondholder wealth expropriation. In firms where dividend payouts are limited by bondholder covenants, dividend payout levels are still below the maximum level allowed by the constraints (Kalay, 1982).

The second way dividend policy affects agency costs is the reduction of these costs through increased monitoring by capital markets. Large dividend payments reduce funds available for perquisite consumption and investment opportunities and require managers to seek financing in capital markets. The efficient monitoring of capital markets reduces less than optimal investment activity and excess perquisite consumption and hence reduce the costs associated with ownership and control separation (Easterbrook, 1984).

In an empirical examination, Rozeff (1982) finds three common trends in corporate dividend policy: (1) lower dividend payment levels are found in high growth firms--investment requirements reduce the funds available for dividend payment, (2) corporations with higher firm specific risks or leverage ratios pay smaller dividends and (3) higher payouts are found in firms with little insider ownership and large number of outside shareholders. These results imply that dividend policy mitigates agency costs due to the partial monitoring activity provided by dividend payments. Other research generally supports the agency costs hypothesis. Table 3.8 outlines these studies.

3.3.3 The Free Cash Flow Theory

Prudent corporate managers working in the shareholders' best interests should invest in all profitable opportunities. However, management and owner separation affords corporate managers the temptation to consume or otherwise waste surplus funds. The inefficient use of funds in excess of profitable investment opportunities by management was first recognized over 60 years ago (Berle and Means, 1932). Jensen's (1986) free cash flow hypothesis updated this assertion combining market information

TABLE 3.8

EMPIRICAL TESTS OF AGENCY COST THEORY

Author(s)	Data	Method of Analysis ¹	Major Result(s)
Rozeff (1982)	1974-1980 Annual	MRA	Cross-sectional dividend payout regularities are the result of the capital cost and agency cost tradeoff when dividends are paid. Firm growth and expected growth are negatively related to the dividend level and the percentage of insider ownership. Growth is positively related to the number of shareholders. Firm risk is negatively correlated with dividend level.
Dyl and Hoffmeister (1986)	1979 Weekly	MRA	Dividends are an important determinant of a firm's risk. Dividend payments are made in order to select a preferred risk environment. Higher dividends are found in lower risk firms.
Crutchley and Hansen (1989)	1981-1985 Annual	MRA	Earnings volatility and degree of leverage are inversely related (consistent with agency theory predictions). New issue transaction costs and dividend payout levels are also negatively correlated. Ownership stake, leverage and dividends are jointly orchestrated by managers to decrease total costs.
DeAngelo and DeAngelo (1990)	1980-1985 Annual	LOGIT	The results support agency theory. All financially distressed firms reduce dividends, even those without covenants requiring them to do so. Debt covenants restrict dividend policy but are not the only factors impacting dividend policy. In the absence of covenants, dividends are reduced; managers are more averse to omission than to reduction. Reductions are the result of inferior performance and strategic maneuvers.

TABLE 3.8 (continued)

EMPIRICAL TESTS OF AGENCY COST THEORY

Author(s)	Data	Method of Analysis	Major Result(s)
Collins, Saxena and Wansley (1992)	1989-1990 Annual	MRA, OLS	Regulated payout ratios are higher than unregulated ratios. The insider ownership stake is not an important determinant in unregulated firms. Increased (decreased) growth and increased (decreased) systematic risk are associated with lower ratios. Regulations inhibit growth, temper external monitor need, and increase wealth transfer through dividends implying decreased insider importance. Restrictions proxy as monitors.
Dempsey and Laber (1992)	1981-1987 Annual	MRA	Extends Rozeff (1982). The original model maintains its substantial explanatory power and design stability. The results are statistically indistinguishable from the original study.
Sun (1992)	1979-1983 Annual	MRA	Efforts to decrease agency costs lead to dividend regularities across firms. Ownership structure, informational asymmetries, and leverage risk characteristics characterize agency problems. Decreased (increased) insider ownership, decreased (increased) growth, and decreased (increased) debt risk are associated with increased (decreased) dividend payments. Results imply that dividend payments can lead to effective monitoring but cannot be used as effective signals. The higher dividend payments increase bondholder risk.

¹ See Appendix A for method of analysis abbreviations.

asymmetries with agency theory. The funds remaining after financing all positive net present value projects cause conflicts of interest between managers and shareholders. Dividend and debt interest payments decrease the free cash flow available to managers for use in investment in marginal net present value projects and manager perquisite consumption. This combination of agency and signaling theory should better explain dividend policy than either theory alone but the free cash flow hypothesis better explains the corporate takeover frenzy of the 1980's (Myers, 1987 and 1990).

An alternate information hypothesis, that changes in dividend policy signal changes in management's expected investment policy, is fashioned by Lang and Litzenberger (1989). The model's inferences support the free cash flow and overinvestment hypotheses better than the signaling hypothesis.

Table 3.9 lists the empirical tests of the signaling and free cash flow hypotheses. Although both of the hypotheses find some support, the research results better support the free cash flow hypothesis. Barber and Castanias (1992) view the two paradigms as complementary rather than competing.

3.3.4 Summary

Although M&M's informational content of dividend hypothesis is supported by the majority of empirical studies, the only direct test of a signaling model (Frankfurter and Gong, 1992) fails to support the model. Empirical research generally supports the agency costs hypothesis and the partial mitigation of these costs through dividend payments. Neither information relay or agency cost mitigation are sufficient to explain the existence and persistence of corporate dividend policy. Jensen's (1986) free cash

TABLE 3.9

EMPIRICAL TESTS OF THE SIGNALING VERSUS FREE CASH FLOW HYPOTHESES

Author(s)	Data	Method of Analysis ¹	Major Result(s)
Lang and Litzenberger (1989)	1979-1984 Intra-day	AARA	Results are consistent with both signaling and free cash flow hypotheses but better support the free cash flow hypothesis.
Barber and Castanias (1992)	1977-1989 Annual	LOGIT NP Tests	The paper views the signaling hypothesis and free cash flow hypothesis as complements. Both explain the initiation of dividends by firms with high cash flows.
Denis, Denis and Sarin (1992)	1962-1987 Daily	XSRA	Replicate Lang and Litzenberger (1989) using a larger sample. Low Q firm's dividend change announcements have larger stock price changes. Q and dividend yield are negatively related. Dividend yield likely drive the study's results. Results support signaling and clientele hypotheses.
Lee and Roberts-Glandoff (1992)	1975-1987 Daily	ES	Dividend initiations support signaling theory but not the free cash flow hypothesis; dividend omissions support both. Both announcements carry information. Investor dividend preference influences the magnitude of price change associated with omissions.
Maquiera and Megginson (1992)	1980-1990 Daily	ES, MRA NP Tests	The free cash flow hypothesis is supported in this analysis of young firms initiating dividends. The Miller and Rock (1985) cash flow signaling and Rozeff (1982) ownership structure hypotheses cannot be rejected.

¹ See Appendix A for method of analysis abbreviations.

flow hypothesis, a combination of agency and signaling theory, more adequately explain corporate dividend policy than either of these theories individually.

3.4 BEHAVIORAL MODELS

No theoretical paradigm developed thus far completely explains the persistence of corporate dividend policy; empirical attempts to validate these theories are inconclusive or contradictory (Baker and Farrelly, 1988). Investor behavior is substantially influenced by societal norms and attitudes (Shiller, 1984). Unfortunately, this motivation has been ignored by financial theorists for the most part due to the difficulty of introducing investor behavior into traditional financial pricing models (Arbel, Carvell and Postnieks, 1988). Including these influences into modeling efforts can enrich the development of a theory to explain the endurance of corporate dividend policy (Shiller, 1989).

Ordinary investors are faced not with risk but with uncertainty--a lack of concise judgement and sense of objective evidence (Knight, 1964). Social pressures can lead to errors in judgement and trading activities by shareholders that cannot be logically explained. These errors in judgement are only mistakes, not lapses of rational investment activity. Mass investor psychology profoundly influences aggregate market activity (Shiller, 1984).

Dividend policy is inconsistent with wealth maximization of the shareholder and is better explained by the addition of a socioeconomic behavior paradigm into economic models. Dividend payouts can be viewed as the socioeconomic repercussion of corporate evolution--the informational asymmetries between managers and shareholders

causes dividends to be paid to increase the attractiveness of equity issues (Frankfurter and Lane, 1991). The systematic relation between industry type and dividend policy reported by Michel (1979) implies that managers are influenced by the actions of competitive firm executives when determining dividend payout levels. Managers realize that shareholders desire dividends and pay or increase dividends as a method of mollifying investors (Frankfurter and Lane, 1991). Dividend payments to shareholders should help increase the corporation's stability by serving as a ritualistic reminder of the managerial and owner relationship (Ho and Robinson, 1992). Dividends are partially a tradition and partially a method to allay investor anxiety (Frankfurter and Lane, 1991).

A review of the survey articles seeking to define financial manager determinants and beliefs about corporate dividend policy follows. Models explaining dividend preference and policy as primarily functions of behavioral and social activities are then examined. The section closes with a brief conclusion.

3.4.1 Managerial Surveys

Lintner (1956) surveyed corporate chief executive offices and chief financial officers and finds dividend policy is an active decision variable because managers believe that stable dividends lessen negative investor reactions. The active determination of dividend policy implies that the level of retained earnings and savings are dividend decision byproducts. Corporate management believes shareholders should receive an equitable portion of earnings. The majority of managers develop long term payout ratio targets and use periodic partial adjustments to reach target levels; the

magnitude of the percentage change is more important than the absolute dollar amount. Unexpected changes in earnings are one of the most important dividend determinants. Managers are reluctant to renege on changes--dividend decreases are met with considerable managerial resistance and dividend increases occur only if managers are sure of the coverage of the higher levels by future cash flows. Dividend are smoothed in the short run so as to not reflect the variability of earnings. These results fail to explain why companies pay dividends.

A change in dividend policy implies a change in managerial expectations of future cash flows and depends substantially on current and past earnings. Darling (1957), Turnovsky (1967) and Fama and Babiak (1968) find empirical support for Lintner's findings; dividends are a function of current and past profit levels, expected future earnings and are negatively correlated with changes in the level of sales. Current income remains the critical determinant of corporate dividend policy 25 years following Lintner's original survey (DeAngelo, DeAngelo and Skinner, 1992).

Other factors not considered by Lintner (regulatory constraints, investment magnitude, debt and firm size) also affect dividend policy. Variations in dividend policy is primarily due to a combination of endogenous and exogenous elements (Dhrymes and Kurz, 1964).

Harkins and Walsh (1971) find that shareholder dividend desires and management need of retained earnings for investment opportunities conflict. A compromise policy partially satisfying both parties is chosen. Managers consider current and expected earnings, dividend payment history, dividend level stability, cash

flows and investment opportunities and shareholder desires in their determination of the payout level. One-half of the firms surveyed have target dividend payout levels; dividends are gradually adjusted over a period of years to reach the target level. Although costly, dividend payments are important.

A survey of 318 NYSE firm chief financial officers (CFO's) by Baker, Farrelly and Edelman (1985) find attitudes similar to those found by Lintner (1956). The CFO's cite the importance of dividend continuity, the belief that share prices are affected by dividend policy and the difference in classification of regular and unusual cash flows as important determinants of dividend policy. Dividends are changed only if managers are sure of the changed cash flows' permanence. The effects on share price from dividend payment and earnings retention are viewed differently by financial managers. Regulated firm CFO's have different attitudes toward dividend policy.

In a survey of corporate managers of dividend achievers (defined as firms with ten consecutive years of dividend increases), the amount of dividend payment is less important than the consistency of payment. Managerial views of dividend policy are essentially unchanged thirty years after Lintner's study; dividends are paid because shareholders expect continued dividend growth and managers believe investors want to receive dividends. Managers believe that dividend payments are necessary to maintain or increase share price and to attract new investors. Dividend payout policy is determined using criteria including sustainability, current firm profitability, future cash flow expectations, and industry norms. The majority of firms develop target payout ratios and use dividends as an active decision variable. Although changes in dividend

policy are viewed by financial managers as carrying information, the message is often ambiguous and can actually misinform investors. Baker and Farrelly (1988) find that less than one-half of financial officers questioned in their study attempted to signal through dividend policy.

3.4.2 Theoretical Behavioral Models

Feldstein and Green (1983) model the corporate dividend decision as the last step in a process that evaluates inputs from five sources. First, dividend policy is a consequence of investor consumption needs. The tax liabilities from dividend payment are less than the transaction costs of selling shares to provide income if earnings are retained. Second, the market value of retained earnings is less than the market value of dividends. Third, dividend payment is consistent with steady state growth and an optimal debt/equity ratio. Fourth, dividend payments are a byproduct of the separation of corporation owners and managers; dividend payments help to diminish the agency costs arising from separation of corporate owners and managers and are used for signaling activities. Finally, although asymmetric information and agency costs are present in the model, the paradigm is not dependent on these market imperfections. Shareholders with diverse tax liabilities and diversification goals in an equilibrium with uncertainty result in dividend payments.

Shefrin and Statman (1984) explain dividend preference by using the theory of self control (Thaler and Shefrin, 1981) and the descriptive theory of choice under uncertainty (Kahneman and Tversky, 1979). Information models are used to justify the presence of corporate dividends while the tax liability of dividends is used as a

counterargument. This model is also consistent with dividend clienteles. Dividends and capital gains are not always perfect substitutes (even in a world without taxes and transaction costs) due to a lack of self control to delay gratification (Thaler and Shefrin, 1981). In financial theory, dividends and capital gains have the same value; this is not the case in a world modeled using the theory of self control. Dividend checks are appreciated more than capital gains and provide an automatic control device on spending levels (Thaler, 1980). Risky alternatives, costs, and payoffs are evaluated separately. This theory is also supported by the greater effects shown following dividend decreases; losses are more significant than gains. Kahneman and Tversky (1982) posit that the sale of shares of stock cause more investor regret and anxiety than spending the cash received from dividend payments. A subsequent price rise of shares sold for income needs increases the shareholders' contrition. Clearly in this model, capital gains and dividends are not perfect substitutes. Regret aversion can induce a preference for dividends through the use of a consumption rule based on the use of dividends, not invested capital. Dividend yields are positively correlated with planned dissaving rate. If dissaving is positively related to age and negatively related to income, portfolio dividend yields will be positively correlated with age and negatively correlated with income.

Marsh and Merton (1986) develop a rational expectations model of dividend policy as management's response to permanent earnings. In equilibrium, dividend levels are determined using future earnings expectations. Using dividends as signals is incompatible with this model.

Marsh and Merton (1987) study an aggregate stock market dividend process using 55 years of aggregate data and economic earnings. Market prices adequately reflect permanent earnings; managers systematically change the dividend payout following unexpected changes in permanent earnings by partially adjusting dividend levels; this partial adjustment causes dividends to be less volatile than share prices. The change in dividends is unrelated to later changes in share price. Lagged dividends explain little aggregate dividend variance when previous period stock price changes are included in the model. Dividends exhibit a systematic time series behavior--the aggregate dividend change is driven by the one period lagged stock price change.

3.4.3 Summary

Managerial and shareholder behavioral and socioeconomic influences profoundly affect corporate dividend policy. In surveys of corporate managers, the authors find that the attitudes toward dividend payments have remained largely unchanged over the past forty years. Managers believe that shareholders expect and are entitled to significant and regular dividend payments. The managers also believe that share price is substantially affected by dividend policy and that shareholders use dividend payments as a major input in firm valuation. However, these surveys are incapable of explaining why corporations began to pay and continue to pay dividends.

Behavioral influences affect shareholder attitudes toward dividend payments. Dividends and capital gains are not perfect substitutes in the eyes of the shareholders due to psychological and behavioral influences affecting the evaluation of the two alternatives. Incorporating investor behavioral and psychological influences into

theoretical models could greatly enrich the development of a theory to explain corporate dividend policy persistence.

3.5 ANALYSIS OF THE EMPIRICAL TESTS OF CORPORATE DIVIDEND THEORY

3.5.1 Introduction

The conflicting results of empirical analyses are commonly blamed on modeling, method of analysis, data or sample period differences. The choice of variables included in or those omitted from a model (Watts, 1976b, McCabe, 1979, Frankfurter and Gong, 1993) and the definition used in the estimation of important factors (Miller and Scholes, 1982) can significantly influence a study's results. Roll (1977) asserts that the lack of an adequate proxy can make a theoretical model untestable. The use of different methods across studies can limit the comparability of the results (Morgan, 1982).

Attempts to empirically validate theoretical dividend models are thus far inconclusive or in some cases even contradictory (Baker and Farrelly, 1988). Numerous rationales have been offered as explanations for these divergent results; the model and empirical method of analysis employed in the studies (Watts, 1973 and Morgan, 1982), the frequency of sample observation (Watts, 1976a and Laub, 1976) and the period of the sample (Watts, 1973) are specified as possible causes of the inconsistencies. The purpose of this analysis is to examine the empirical studies of corporate dividend policy and determine if the choice of method of analysis, frequency of sampling observation or sample period influence the results of these tests of dividend policy. The journal of publication is also included as an explanatory variable.

This research is important for several reasons. Results that cannot be duplicated over diverse sample periods are likely artifacts of a particular sample period. In contrast, findings that persist through time can lead to the development of more descriptive models. Finally, results that change over time can be indicative of changes in the returns generating mechanism (Amihud and Mendelson, 1987).

3.5.2 Method of Analysis

The categorical data analysis method (CDAM) is used to determine if the method of analysis, observation frequency, sample period or journal of publication can be used to predict and explain the results of a study. The data analyzed in the analysis is drawn from Tables 3.1-3.8. Five attributes from each study are present in the test. The first variable, the results of each study, are classified as either supporting or failing to support the hypothesis tested by the authors. The second variable of the model is the method of analysis employed in each of the dividend studies. These are classified either as methods analyzing changes in price or average return (event study or price change methods of analyses) or studies using regression analyses (least square analysis, logit analysis, etc.) or other methods (see Appendix A for the assignment of methods of analysis to classes). The third variable is defined by the studies' choice of data type. Studies are classified into one group if daily data is used and into another for less frequent observations. The mid-point of each study's sample period serves as the fourth variable. If a study's mid-point of the sample period occurs before 1976, the study is assigned to one class; if the mid-point is after 1976, it belongs to the other class. The choice of 1976 as the dividing point is based on the publication of Jensen and

Meckling's (1976) agency cost theory and the beginning of intense examination of the costs of asymmetric information. Also, the approximate mid-point of the "modern" financial era (beginning with Modigliani and Miller's seminal paper of 1958) is 1976. In addition, this choice divides the studies used in the analysis into two approximately equal groups. The findings of the study are robust; classifying the sample period using other criteria did not alter the study's results. The final independent variable entered is the journal of publication. Classification is fixed by the study's publication in a "top-tier" journal (*The Journal of Finance*, *Journal of Financial and Quantitative Analysis*, *Journal of Financial Economics* and *The Review of Financial Studies*) or not. Each study's result is used as the response (dependent) variable in the analysis while the method of analysis, the data type, the sample period and the journal are employed as explanatory (independent) variables.

CDAM is a specialized multivariate analysis technique for evaluation of response and explanatory variables via weighted least squares (WLS) procedures. The procedure is useful in the examination of dichotomous (i.e. studies supporting or failing to support a hypothesis), non-ordered polytomous (i.e. differences in method of analysis) and ordered polytomous (i.e. early, middle and late sample periods) discrete variables. Although the technique resembles the Analysis of Variance (ANOVA), CDAM differs from ANOVA by describing the structural relations between the explanatory variables. ANOVA models, in contrast, determine the effects of independent variables on a dependent variable and partition the overall variability of the model. A detailed explanation of CDAM is found in Appendix B. The method of analysis assumes

mutually independent explanatory variables--the knowledge of one variable does not increase the probability of a correct prediction of another explanatory variable's level.

The implementation of CDAM is facilitated by the assignment of the sample's observations into classes based on some explanatory variable characteristic. The table developed from this classification process provides a concise summary of the data. The technique then uses a series of dummy variables representing the explanatory variable classes and tests the model using WLS estimation techniques. Table 3.10 displays the framework used in the assignment of the individual studies to CDAM populations.

3.5.3 Empirical Results

A population profile succinctly summarizes the assignment of individual empirical studies to groups based on explanatory variable combinations. The sample size of each population is the frequency that each combination of categorical variables appears in the overall sample. Table 3.11 summarizes the classification of empirical studies analyzing the theoretical explanations of corporate dividend policy into CDAM populations.

As shown in Table 3.12, the WLS estimates of study method of analysis, data type, sample period and journal coefficients do not differ significantly from zero and therefore do not influence the outcome of the analyses. The estimates of each explanatory variable are extremely small and the reported p-values range from 0.167 to 0.962. The intercept term representing the mean of the dependent variable is highly significant with a p-value of <0.001 .

TABLE 3.10

THE CATEGORICAL DATA ANALYSIS METHOD OF ANALYSIS
CLASSIFICATION FRAMEWORK

Result	Method of Analysis	Data Type	Sample Period	Journal
Support	Price Change ¹	Daily	Pre 1976	Top-tier ²
			Post 1976	Other
		Other ³	Pre 1976	Top-tier
			Post 1976	Other
	Other ⁴	Daily	Pre 1976	Top-tier
			Post 1976	Other
		Other	Pre 1976	Top-tier
			Post 1976	Other
			Pre 1976	Top-tier
			Post 1976	Other
Fail to Support	Price Change	Daily	Pre 1976	Top-tier
			Post 1976	Other
		Other	Pre 1976	Top-tier
			Post 1976	Other
	Other	Daily	Pre 1976	Top-tier
			Post 1976	Other
		Other	Pre 1976	Top-tier
			Post 1976	Other
			Pre 1976	Top-tier
			Post 1976	Other

¹ Price change methods of analysis include event study and price change methods of analysis. A listing of method of analysis classifications is found in Appendix A.

² Top-tier journals include *The Journal of Finance*, *Journal of Financial and Quantitative Analysis*, *Journal of Financial Economics* and *The Review of Financial Studies*.

³ Other data includes weekly, quarterly and annual observations.

⁴ Other methods of analysis include regression analyses and other methods (see Appendix A).

TABLE 3.11

**CATEGORICAL VARIABLE ANALYSIS POPULATION PROFILES OF
EMPIRICAL ANALYSES OF CORPORATE DIVIDEND POLICY**

Sample	Method of Analysis	Data	Sample Period	Journal	Sample Size
1	Price Change	Other	Pre 1976	Top-tier	5
2	Price Change	Other	Pre 1976	Other	2
3	Price Change	Other	Post 1976	Top-tier	2
4	Price Change	Other	Post 1976	Other	2
5	Price Change	Daily	Pre 1976	Top-tier	11
6	Price Change	Daily	Pre 1976	Other	7
7	Price Change	Daily	Post 1976	Top-tier	17
8	Price Change	Daily	Post 1976	Other	20
9	Other	Other	Pre 1976	Top-tier	19
10	Other	Other	Pre 1976	Other	25
11	Other	Other	Post 1976	Top-tier	9
12	Other	Other	Post 1976	Other	15
13	Other	Daily	Pre 1976	Top-tier	3
14	Other	Daily	Pre 1976	Other	3
15	Other	Daily	Post 1976	Top-tier	8
16	Other	Daily	Post 1976	Other	7

TABLE 3.12

**ANALYSIS OF WEIGHTED LEAST SQUARES ESTIMATES OBTAINED FROM
CATEGORICAL VARIABLE ANALYSIS OF EMPIRICAL ANALYSES OF
CORPORATE DIVIDEND POLICY¹**

Variable	Estimate	Standard Error	Chi Square ²	Probability (P-Value)
Intercept	0.2088	0.0324	41.43	0.001
Method of Analysis	0.0118	0.0413	0.08	0.775
Data Type	-0.0020	0.0411	0.00	0.962
Sample Period	0.0452	0.0327	1.91	0.167
Journal Type	-0.0089	0.0324	0.08	0.784

¹ The empirical analyses evaluated are obtained from Tables 3.1-3.8.

² N = 155 in this analysis.

CDAM is then applied to empirical studies testing a specific hypothesis. The information content of dividend hypothesis empirical tests is the only subset of empirical analyses with enough observations to test the effect that method of analysis, data type, sample period and journal selection have on the outcome of the research. The data used in this analysis are drawn from Tables 3.5 and 3.6. Table 3.13 shows the population profiles of studies testing the information content of dividend hypothesis.

TABLE 3.13

CATEGORICAL VARIABLE ANALYSIS POPULATION PROFILES
OF EMPIRICAL ANALYSES OF THE INFORMATION
CONTENT OF DIVIDEND HYPOTHESIS

Sample	Method of Analysis	Data	Period	Journal	Size
1	Price Change	Other	Pre 1976	Top-tier	2
2	Price Change	Other	Pre 1976	Other	2
3	Price Change	Other	Post 1976	Top-tier	2
4	Price Change	Other	Post 1976	Other	2
5	Price Change	Daily	Pre 1976	Top-tier	5
6	Price Change	Daily	Pre 1976	Other	5
7	Price Change	Daily	Post 1976	Top-tier	8
8	Price Change	Daily	Post 1976	Other	11
9	Other	Other	Pre 1976	Top-tier	7
10	Other	Other	Pre 1976	Other	7
11	Other	Other	Post 1976	Top-tier	1
12	Other	Other	Post 1976	Other	5
13	Other	Daily	Pre 1976	Top-tier	2
14	Other	Daily	Pre 1976	Other	2
15	Other	Daily	Post 1976	Top-tier	5
16	Other	Daily	Post 1976	Other	3

The total number of studies testing the information content of dividend hypothesis by CDAM is 69. Consistent with the results found in the overall analysis of empirical tests of theoretical dividend models, the method of analysis, data type,

sample period and journal coefficients are again not significant. The p-values of the coefficients of the explanatory variables range from 0.219 for the journal variable to 0.9535 for the method of analysis choice variable. The intercept term is again highly significant with a p-value of <0.001 . Table 3.14 shows the results of the CDAM analysis of studies testing the information content of dividend hypothesis.

TABLE 3.14

ANALYSIS OF WEIGHTED LEAST SQUARES ESTIMATES OBTAINED FROM CATEGORICAL VARIABLE ANALYSIS OF EMPIRICAL ANALYSES OF THE INFORMATION CONTENT OF DIVIDEND HYPOTHESIS¹

Variable	Estimate	Standard Error	Chi Square ²	Probability (P-Value)
Intercept	0.2465	0.0475	26.89	0.001
Method of Analysis	-0.0031	0.0523	0.00	0.953
Data Type	-0.0433	0.0579	0.56	0.456
Sample Period	0.0252	0.0504	0.25	0.617
Journal Type	0.0565	0.0460	1.51	0.219

¹ The empirical analyses evaluated are obtained from Tables 3.5 and 3.6.

² N = 69 in this analysis.

3.5.4 Discussion and Summary

A common rationale used to explain different results from empirical analyses is to attribute the inconsistencies to method of analysis, data, or sample differences. In contrast to commonly held beliefs, the choice of method of analysis, data type and sample period do not significantly affect the results of a study. Using CDAM, an examination of empirical studies testing a wide range of hypotheses of dividend policy

and of empirical tests of a specific hypothesis (the information content of dividend hypothesis) finds that none of these explanatory variables is significant (p-values range from 0.167 to 0.962).

The intercept term is highly significant in both the overall analysis and the information content of dividend hypothesis analysis. Because the term represents all variables not included in the model, factors absent from the model can be responsible for the diverse results of the empirical tests.

Additional CDAM is performed using finer divisions of the explanatory variables. The method of analysis variable is divided into four groups--event study, price change, regression and other methods of analysis. The variable representing data type is divided into studies using annual, quarterly, monthly and daily samples and is analyzed. The results of these efforts are consistent with previous findings--none of the independent variables show any significant explanatory power. Statistical results of these tests are shown in Appendix B.

The length of the sample period or the total number of observations used in the analysis can influence the results of a study. Studies using data drawn from a smaller time horizon can be subject to anomalies that are washed out over longer sample periods or with more observations. Model specification, variable definition and proxy choice can also impact the findings.

3.6 SUMMARY AND CONCLUSIONS

"The nearly universal policy of paying substantial dividends is the primary puzzle in the economics of corporate finance" (Feldstein and Green, 1983). A number

of conflicting theoretical models all lacking strong empirical support define the current state of financial economists' attempts to explain the dividend phenomenon. Nor can corporate dividend policy be ascribed to existing regulatory constraints. The incomplete nature of current theories and the sensitivity of data to changes in specifications precludes any dogmatism (Brealy and Myers, 1991).

We know that dividend policy is "sticky"--managers decrease dividends only when absolutely necessary--in the event of poor earnings with reserves insufficient to fund the dividend (Myers, 1984 and DeAngelo, DeAngelo and Skinner, 1992). Furthermore, individual market imperfections do little to explain the underlying reasons for dividend payments (Black, 1976). The systematic time series behavior of corporate dividend policy implies that firm specific theoretical explanations of dividend policy--signaling and agency theories--cannot explain the practice (Marsh and Merton, 1987).

The majority of shareholders must pay taxes on dividend income. The majority of empirical works support the hypothesis that the returns on dividend paying stocks are increased to offset the tax liability of dividend payment. However, the absence of a pronounced difference in the portfolios of high tax bracket and low tax bracket individuals casts doubts as to the significance of taxes in the determination of corporate dividend policy.

Dividends can relay information but the use of dividends for this purpose fails to explain why firms pay dividends. Signaling's impact on the investor's preference for dividends is even less certain due to the ambiguity associated with signals. Further, if dividends are changed only to signal firm specific information, aggregate dividend

changes should be small and random in nature rather than having a systematic time series pattern and a demonstrated positive trend (Marsh and Merton, 1987).

No single economic rationale is capable of explaining the dividend phenomenon. A combination of risk averse shareholders invested in capital constrained firms, the costs associated with systematic liquidation of holdings, agency costs and information transmission can partially explain the preference of shareholders for dividends (Crockett and Friend, 1988). The incompleteness of the theoretical model is largely due to a misconception of the nature of dividend payments. The continuance of dividends is based largely on long-standing corporate traditions (Brealy and Myers, 1991).

The corporate tradition of paying dividends is the sum total of over three hundred years of dividend payments. Despite individual differences in policy, consistent, identifiable patterns of dividend payment recur through corporations. Managers are reluctant to reduce dividend payments, even in periods of financial distress. Moreover, dividends are increased only if a corporation's management is confident that the higher levels can be maintained. Executives believe shareholders expect significant dividends to be paid and shareholders believe that they deserve these dividends. Finally, shareholders prefer dividend payments despite their economic liability. Myers (1990) surmises that dividend payments are in reality an unwritten contract between shareholders and corporate management.

Current models of corporate dividend policy by and large ignore behavioral and socioeconomic influences on managerial and shareholder activities. Dividend preference is difficult to explain other than as an irrational desire by investors for

dividends unless behavior models and social pressures are incorporated into the model (Shiller, 1984). The exclusion of these motivations from financial models severely limit their application to corporate activities and policy determination. Dividend policy is influenced by the same fads and fashions that affect stock prices because the managers who determine dividend policy are motivated by behavioral and socioeconomic influences (Shiller, 1990). A model incorporating a combination of modern financial theories and behavioral and psychological influences best explain corporate dividend policy (Shiller, 1986).

CHAPTER 4

EXECUTIVE COMPENSATION, DIVIDEND POLICY AND CAPITAL STRUCTURE

4.1 INTRODUCTION

The seminal papers of Modigliani and Miller (1958, 1963) and M&M showed that a firm's capital structure and dividend policy are irrelevant in the determination of the value of the company. These theses motivated an abundance of theoretical and empirical work to determine the existence and definition of the optimal capital structure and dividend policy for a firm. An implicit assumption of the majority of these efforts is that corporate managers always act in the best interest of the shareholders.

In contrast, financial hypotheses based on agency theory maintain that conflicts of interest arising from the separation of a corporation's management from firm ownership can result in managers deviating from the shareholder wealth standard. The personal goals of management--security, advancement, prestige, power and personal income--often take precedent over corporate goals (Kaysen, 1960 and Gordon, 1961) and are the likely result of this separation (Berle and Means, 1932).

Agency theory suggests that informational asymmetries and managerial imprudence can be minimized through the joint optimization of corporate executive compensation contracting, dividend policy and capital structure (Jensen, Solberg and Zorn, 1992, Mehran, 1992 and Smith and Watts, 1992). The proper structuring of compensation contracts can better order managerial activities and efforts to the benefit of shareholder interests. The payment of significant dividends and the obligations

resulting from debt issuance can decrease the available free cash flow for excess perquisite consumption by corporate managers and increase monitoring activities by capital markets (Easterbrook, 1984 and Jensen, 1986).

Executive compensation, dividend policy and capital structure are major corporate policy decisions. Theory predicts that these policy decisions can be optimized through a concurrent decision making process. A set of firm-specific financial measures influence the decision making process for each of these corporate strategies. The purpose of this chapter is to examine the interaction between executive compensation, dividend and capital structure policy decisions.

Section 4.2 reviews the existing executive compensation literature. Section 4.3 examines the predicted effects of explanatory variables on compensation, dividend and financing policy variables. Section 4.4 discusses method of analysis, variable definitions and model development. Section 4.5 presents the results of the empirical examination. Section 4.6 is a brief summary of the chapter.

4.2 LITERATURE REVIEW

The separation of managers and owners can result in a number of potential problems. The intent of corporate management often diverges from endeavors that would most benefit the owners of the company (Jensen and Meckling, 1976). The deviations include the rejection of positive net present value projects and other strategies that result in the underinvestment of owner capital (Myers, 1977). Jensen (1986) posits that these squanderings of investment opportunities are especially pronounced in companies with substantial cash flows. Jensen and Smith (1985) summarize the

applications of agency theory to management, shareholder and debtholder conflicts of interest.

A number of potential solutions are offered to mitigate these conflicts of interest. Jensen and Meckling (1976) and Fama (1980) contend that the competitive nature of the managerial labor market will discipline imprudent managerial activity. Competitive forces and the threat of takeover will also impede improper activities (Manne, 1965 and Jensen and Ruback, 1983). Firms with significant dividend payment policies are forced to undergo the scrutiny of capital markets when funds for investment activities are needed (Rozeff, 1982 and Easterbrook, 1984) while investors holding large blocks of shares also monitor executive activity (Shleifer and Vishney, 1986).

Haugen and Senbet (1981), Beck and Zorn (1982), Jensen and Zimmerman (1985) and Lewellen, Loderer, and Martin (1987) show that the proper structuring of executive compensation plans can further decrease the agency costs arising from the separation of owners and managers. Managerial behavior is better aligned with shareholder interests by relating compensation and termination decisions to share price performance (Coughlan and Schmidt, 1985). The initial adoption of or a change in corporate compensation plans is associated with positive abnormal share price returns and increases in shareholder wealth (Larcker, 1983, Brickley, Bhagat and Lease, 1985, Tehranian and Waagelein, 1985, Warner, 1985 and DeFusco, Johnson and Zorn, 1990). Raviv (1985) believes this change in corporation performance is the direct result of the implementation of performance based executive compensation plans.

The theoretical executive compensation models of Holmström (1979) and Shavell (1979) extend and formalize the theoretical agency models of Ross (1973), Stiglitz (1975) and Mirrlees (1976). In these models, executive production is increased by relating compensation to firm performance when executive output is unobservable. Although not flawless, the benefits received from the use of an imperfect monitoring device (executive incentive plans) outweigh the costs. Rosen (1982) extends the model to a macroeconomic setting while Diamond and Verrecchia (1982) include security prices in their incentive modeling.

Consistent with long-term contracting, executive experience and compensation are related even when the executive's productivity level effect is ignored (Harris and Holmström, 1982). Paying salaries to executives in excess of their marginal product is economically rational if the wages motivate lower rank workers to increase their production in hope of attaining a higher position (Lazear and Rosen, 1981). Sappington (1991) provides a broad overview of the theoretical incentive contracting literature.

Lambert, Larcker and Verrecchia (1991) model compensation contract valuation from the manager's perspective. They show that the value of the compensation plan to the manager can be quite different than the cost perceived by the firm's owners. They further show that incentive contracts cannot always be valued correctly using market based valuation techniques and that the addition of new incentives added to existing plans can only be accurately valued by analyzing the total executive compensation plan.

Executive compensation has been intensely analyzed by financial economists. The efforts can be divided into studies that find firm size to be the primary determinant of executive compensation, those that contend that salary level is better related to firm share price and profitability, those that show that multiple inputs determine compensation levels and those that analyze the effects of the adoption of executive incentive plans on various financial measures and operational strategies.

A positive correlation between executive compensation and firm size is shown by several empirical studies summarized in Table 4.1. McGuire, Chiu, and Elbing (1962) and Ciscel (1974) report that managerial wages in large industrial corporations are a reward for current and past sales. Current sales are found to be the primary input in the compensation determination process. The emphasis on maximizing sales volume is likely to lead to managerial goals that unduly accentuate strategies formulated to increase sales while disregarding long-term profits (Patton, 1966 and Baumol, 1967). A study of utility corporations shows that firm size has a significant influence on and is the major determinant of executive compensation in regulated industries (Abdel-Khalik, 1988).

A second body of literature, outlined in Table 4.2, argues that executive compensation levels are more closely correlated with stock price and corporate profits. The positive correlation between executive compensation and corporate performance provides incentives for managers to work toward goals that benefit corporate owners (Masson, 1971, Coughlan and Schmidt, 1985, Agrawal, Makhija and Mandelker, 1991, Crystal, 1991 and Lewellen, Loderer, Martin and Blum, 1992). In the two decades

TABLE 4.1

EMPIRICAL STUDIES RELATING EXECUTIVE COMPENSATION TO FIRM SIZE

Author(s)	Data	Method of Analysis ¹	Major Result(s)
McGuire, Chiu and Elbing (1962)	1953-1959 Annual	Means Test	Executive compensation in large industrial corporations is a reward for past and current sales. Current sales are the most important determinant.
Patton (1966)	1953-1965 Annual	XSRA	Executive compensation is more closely related to sales than profits. This emphasis on total sales could lead to goals with an undue accentuation on increasing sales levels at the sacrifice of corporate profits.
Baumol (1967)	Annual	XSRA	Executive compensation is better correlated with sales than with corporate profits.
Ciscel (1974)	1969-1971 Annual	Corr Coeff	Firm growth and size rather than profitability are the major determinants of executive compensation. The results can be confounded by collinearity between the explanatory variables.
Abdel-Khalik (1988)	1981-1983 Annual	2SLS	Firm size is the major determinant of executive compensation in regulated industries. No correlation between either compensation and operating efficiency or compensation and managerial effort is found.
Chopin (1993)	1973-1991 Annual	SUR	The effect of sales level on executive compensation is widely divergent across industries; positively related in some, negatively in others and not related in others. Industry and firm characteristics should be included in compensation analyses.

¹ See Appendix A for method of analysis abbreviations.

following World War II, companies with executive wage incentives based on performance have higher returns than those with bonuses tied to the level of sales or corporate profits (Masson, 1971). Lewellen (1968, 1969) maintains that executive compensation is directly related to the firm's profitability through executive stock ownership programs and incentive-based deferred compensation plans. The performance relative to competing firms in the firm's industry rather than the actual price performance is used to determine salaries (Antle and Smith, 1986). Early study results (McGuire, Chiu, and Elbing, 1962, Patton, 1966 and Baumol, 1967) are in error because of their reliance on cross-sectional data and one year profit levels.

A third group of studies reviewed in Table 4.3 contend that the determining process of executive salaries is more complex than previously hypothesized and the association cannot be explained by a single variable. Stober (1988) questions the logic of using firm size to totally explain the differences in corporation executive compensation levels. The disparate levels of executive compensation and the inconsistent correlation of sales level to executive compensation across industries implies that the determinant process of salaries is more complex than the early research suggests. According to Stober, multiple input factors influence and determine the level of managerial compensation.

Murphy (1985) finds that compensation is positively correlated with both firm size and profitability. Smith and Watts (1992) (hereafter S&W), Gaver and Gaver (1993) and Kole (1993a) discuss the interaction between investment, financing and

TABLE 4.2

EMPIRICAL STUDIES RELATING EXECUTIVE COMPENSATION TO FIRM SHARE
PRICE AND CORPORATE PROFITS

Author(s)	Data	Method of Analysis ¹	Major Result(s)
Lewellen and Huntsman (1970)	1942-1963 Annual	XSRA	Results conflict with McGuire, Chiu, and Elbing (1962). Using multivariate regression, the authors find that profits strongly influence executive compensation levels while sales lack a significant impact. The firm's market value also has a major influence on the compensation level. Executive salary and bonus serve as a good proxy for total compensation.
Masson (1971)	1947-1966 Annual	XSRA	Early studies (McGuire, Chiu, and Elbing, 1962, Patton, 1966 and Baumol, 1967) are in error due to their reliance on cross-sectional data and one year profit levels. Executive compensation incentives are predominately related to stock price performance. The relation to corporate sales levels is neutral.
Coughlan and Schmidt (1985)	1978-1980 Annual	XSRA	Managerial behavior is better managed by relating compensation and termination decisions to share price performance. Sales growth has a minor influence in aligning shareholder and manager interests. Share price and managerial turnover are negatively correlated.
Benston (1985)	1970-1975 Annual	DA	Conglomerate firm share prices and managerial compensation show little correlation. The change in the market price of shares owned by executives impacts managerial wealth three to five times more than managerial salaries and bonuses.

TABLE 4.2 (continued)

EMPIRICAL STUDIES RELATING EXECUTIVE COMPENSATION TO SHARE PRICE

Author(s)	Data	Method of Analysis	Major Result(s)
Antle and Smith (1986)	1947-1977 Annual	TSRA XSRA	Overall results weakly support the hypothesis that executive compensation is based on relative firm performance evaluation. Wage levels are positively correlated with accounting profitability. Average industry profit levels are used in evaluating executive performance.
Agrawal, Makhija and Mandelker (1991)	1975-1984 Annual	XSRA	Manager and shareholder interests are aligned through managerial compensation packages in the utility industry. Results contrast with Ciscel and Carroll (1982)--the differences are possibly due to differences in variable definition. Compensation and stock price changes are positively related implying incentive optimize shareholder wealth.
Lanen and Larcker (1992)	1970-1986 Annual	TSRA XSRA	Changes in executive compensation plans are in response to changes in the corporation's competitive environment and/or strategic plan. Regulatory constraints influence compensation contracts. Diversification into non-regulated fields and production efficiency are unrelated to compensation levels. Findings contrast with Abdel-Khalik (1988).
Lewellen, Loderer, Martin and Blum (1992)	1964-1973 Annual	OLS	Higher levels of executive compensation lead to better firm performance whether firm performance is defined by higher levels of profitability or stock return. This correlation implies that agency costs can be reduced by properly designing executive compensation packages.

¹ See Appendix A for method of analysis abbreviations.

compensation decisions and argue that these decisions are partially driven by the firm's investment opportunity set.

A fourth body of literature summarized in Table 4.4 examines the effects that changes in executive compensation packages have on financial measures and operational strategies of the corporation. Changes or introduction of performance based incentives result in changes in stock prices (Raviv, 1985). Both short term and long term compensation plan adoption is associated with positive abnormal returns (Brickley, Bhagat and Lease, 1985 and Tehranian and Waagelein, 1985). Kumar and Sopariwala (1992) document increases in corporate profitability, accounting returns and earnings per share following plan introduction. The improved performance is attributed to a better alignment of shareholder and manager interests and a decrease in self-serving behavior by managers but the results can be confounded by tax benefits or signaling effects.

Conversely, DeFusco, Zorn and Johnson (1991) find a decrease in cumulative abnormal returns and firm profitability in the five years following incentive plan adoption. In addition, shareholder risk also increases; earnings and share price volatility rise from changes in manager risk taking behavior after the plan is initiated. Managers attempt to ease the equity holder's uncertainty and fear by decreasing the corporation's level of outstanding debt and increasing dividend payments. Despite the increase, dividend levels are lower than levels forecasted. The smaller increase in dividends is the result of decisions that benefit corporate managers; most of the stock

TABLE 4.3

EMPIRICAL STUDIES RELATING EXECUTIVE COMPENSATION TO MULTIPLE FACTORS

Author(s)	Data	Method of Analysis ¹	Major Result(s)
Ciscel and Carroll (1980)	1970-1976 Annual	XSRA	Executive compensation increases with increased profits (achieved either through increased sales or decreased costs). Firm size also significantly impacts compensation levels but the market for corporate executives is the primary determinant of salaries. Firm specific characteristics substantially influence executive compensation.
Carroll and Ciscel (1982)	1970-1976 Annual	XSRA	Executives in regulated industries have substantially lower earnings than their contemporaries in non-regulated industries. Although sales is a significant determinant in the compensation levels of all industries analyzed, profit levels are used as an input factor only in non-regulated industries.
Eaton and Rosen (1983)	1970-1973 Annual	XSRA	The executive compensation scheme is affected by the executive's age, firm monitoring capabilities, and noise confounding future firm performance. Older executives have increased levels of deferred compensation and more stable compensation plans while younger executive compensation is more closely aligned with future firm performance (through stock options). Executives of firms with high research and development commitments have compensation programs less closely tied to firm performance.

TABLE 4.3 (continued)

EMPIRICAL STUDIES RELATING EXECUTIVE COMPENSATION TO MULTIPLE FACTORS

Author(s)	Data	Method of Analysis	Major Result(s)
Murphy (1985)	1964-1981 Annual	XSRA	The percentage change in managerial salary and bonus is positively correlated with firm sales and firm size. Long term incentive options are negatively related--managers are more likely to be offered incentives when the stock price is depressed. The variance is largely unexplained.
Lewellen, Loderer and Martin (1987)	1964-1973 Annual	OLS	The variation in executive compensation plans across firms imply that individual firm plans are structured to decrease agency costs. Executive compensation and the managerial decision making process are interrelated.
Jensen and Murphy (1990)	1974-1986 Annual	OLS LOGIT	Results are inconsistent with agency theory--incentive payment schemes and threat of dismissal have little effect on managerial activity. CEO's are a minor production process input and their activities are easily analyzed and monitored by the board of directors. Implicit regulations are the most likely reason for contract limitations. The executive compensation and shareholder wealth correlation is small and has decreased over the past fifty years. Bonuses (50 percent of CEO compensation) are not based on sales, share price, or accounting earnings.
Lambert, Larcker and Verrecchia (1991)	1970-1984 Annual	MRA	Individual characteristics of corporate managers (for example, the percentage of managerial wealth in company stock) can significantly alter the cost/value correlation of corporate contracts. These personal attributes can also alter the managers' level of risk aversion.

TABLE 4.3 (continued)

EMPIRICAL STUDIES RELATING EXECUTIVE COMPENSATION TO MULTIPLE FACTORS

Author(s)	Data	Method of Analysis	Major Result(s)
Gibbons and Murphy (1992)	1971-1989 Annual	OLS	Executive career concerns have significant impact on managerial activity even in the presence of incentive contracts and should be considered in the development of a total incentive plan.
Riahi-Belkaoui (1992)	1986 Annual	OLS, WLS	Compensation is positively correlated with both sales and profits and is positively related to security analysts' opinions.
Smith and Watts (1992)	1965-1985 Annual	XSRA	Firms with higher growth rates have lower debt ratios and dividend yields and higher executive compensation levels. Stock option plans are also more common in these firms. As firms increase in size, dividend yields and compensation levels increase (consistent with Murphy, 1985).
Gaver and Gaver (1993)	1985 Annual	OLS TOBIT LOGIT	The results support Smith and Watts (1992). Executive compensation is higher in growth firms. Stock option plans are also more common in these firms but the difference in the frequency is not significant.
Gilson and Vetsuypens (1993)	1981-1987 Annual	OLS NP Tests	Executive compensation plans are affected by a firm's financial distress. Incentives are altered and compensation programs are restructured so as to expedite mediation with creditors.
Kole (1993a)	1980 Annual	LOGIT NP Tests	Supports Smith and Watts (1992) and Gaver and Gaver (1993). Complex associations exist between executive compensation contract determinants.

¹ See Appendix A for method of analysis abbreviations.

option plans are not dividend protected and the payment of dividends reduce the value of the option (Lambert, Lanen and Larcker, 1989).

4.3 EXECUTIVE COMPENSATION, DIVIDENDS AND DEBT

4.3.1 Introduction

Existing models of the relation between policy and exogenous variables provide the basis for previous empirical analyses of executive compensation, dividend and debt policy variables. Theoretical predictions about the relation between compensation, dividend policy and capital structure policy variables and the exogenous variables are discussed in the sections following.

4.3.2 Executive Compensation

Two alternative hypotheses explain the executive compensation and dividend policy relation. Contracting theory (S&W) predicts a negative correlation between dividend and compensation levels; firms with more growth opportunities should have higher levels of compensation and lower levels of dividends. In contrast, if dividends are used to lessen shareholder anxieties about managerial activities that deviate from shareholder wealth maximization (Lintner, 1956, Easterbrook, 1984 and Frankfurter and Lane, 1991) and if considerable compensation payments are a source of investor apprehension, the correlation should be positive. If compensation and dividend levels are positively related, the results support contracting theory; a negative finding would better support the alternate hypothesis.

TABLE 4.4

**EMPIRICAL STUDIES DEMONSTRATING THE EFFECTS OF EXECUTIVE INCENTIVE PLAN
ADOPTION ON FINANCIAL MEASURES AND OPERATIONAL STRATEGIES**

Author(s)	Data	Method of Analysis ¹	Major Result(s)
Larcker (1983)	1971-1978 Annual Daily	NP Tests ES	Capital investment significantly increases following executive incentive plan adoption. Initiation is also associated with positive abnormal returns. Changes in contracts cause changes in the managerial decision making process.
Brickley, Bhagat and Lease (1985)	1979-1982 Daily	ES ANOVA	Long-term compensation plans increase manager and shareholder interest alignment. Plan introductions are associated with increases in shareholder wealth but the increases can be the result of tax benefits or signaling.
Tehrani and Waageleir (1985)	1970-1980 Monthly	ES	Short term compensation plan announcements result in positive abnormal returns. Results are possibly confounded by other factors. Although plan adoption provides an incentive to increase earnings, the price adjustment is not immediate.
Lambert, Larcker and Larcker (1989)	1946-1978 Annual	TSRA XSRA	Actual dividend payments are less than expected payments following initial adoption of stock option plans. This shortfall is the result of manager self-serving behavior because increases in dividends reduce the value of executive stock options since most are not dividend protected. The reduction in dividend payout is greatest in firms where the decrease will produce the largest increase in option value.

TABLE 4.4 (continued)

EMPIRICAL STUDIES DEMONSTRATING THE EFFECTS OF EXECUTIVE INCENTIVE PLAN
ADOPTION ON FINANCIAL MEASURES AND OPERATIONAL STRATEGIES

Author(s)	Data	Method of Analysis	Major Result(s)
DeFusco, Johnson and Zorn (1990)	1978-1982 Daily	ES	The variance of stock prices, option prices and accounting returns increase following executive stock option plan adoption. Stockholder wealth also increases but bondholder wealth decreases. Effects are the result of a perceived change in managerial risk-avoidance behavior.
DeFusco, Zorn and Johnson (1991)	1978-1982 Annual	NP Tests	Changes in executive incentive plans cause changes in managerial risk taking behavior. Although dividend payments increase and the debt ratio declines, firm earnings volatility increases, profits decrease and research and development expenditures decrease. Cumulative abnormal returns decrease in the five years following plan adoption.
Kumar and Sopariwala (1992)	1978-1982 Daily	ES NP Tests	Adoption of performance based executive compensation contracts are associated with positive abnormal returns. The positive returns are consistent with a reduction in agency costs. Plan initiation is followed by an increase in the firm's profitability and is positively correlated with the EPS growth rate.

¹ See Appendix A for method of analysis abbreviations.

According to contracting theory, executive salaries and debt levels should be negatively correlated; wage levels are positively related to growth opportunities and firms with high growth potential have lower levels of debt. Growth options are financed with equity rather than debt to avoid potential agency conflicts (Myers, 1977).

Contracting theory predicts a positive relation between compensation and firm size because managerial decisions affect a larger stock of resources in large firms and hence the decision should be better compensated. Similarly, managerial salaries and incentive plans are positively correlated since both are positively related to growth opportunities. McGuire, Chiu and Elbing (1962) and Ciscel (1974) find that compensation levels and firm size are positively correlated. Other research (Lewellen and Huntsman, 1970 and Masson, 1971) shows a positive correlation between executive wages and firm profitability.

4.3.3 Dividends

The cash flow identity links dividends and investments. Firms with more investment opportunities pay lower dividends. Rozeff (1982), Easterbrook (1984), Myers and Majluf (1984) and Jensen (1986) theorize that faster growing firms have more investment opportunities resulting in smaller free cash flows and lower dividend payments. Because growth firms pay higher compensation to their executives, compensation and dividends should be negatively related.

Contracting theory predicts a positive association between debt and dividends. In contrast, Jensen, Solberg and Zorn (1992) (hereafter JS&Z) predict that higher dividend levels should exist in firms with lower leverage ratios because of a tradeoff

between fixed (debt) and variable (dividend) payout obligations. They also maintain that corporations with higher levels of collateralized assets pay higher dividends.

A negative association between firm growth and dividends is predicted by contracting theory. In contrast, signaling models hypothesize that growth firms will pay more dividends than non-growth firms. Growth firms should have higher levels of asymmetric information and will attempt to decrease these asymmetries by paying higher dividends. Numerous theoretical and empirical analyses find dividend payout and firm profitability to be positively related (for example, see Lintner, 1956, Bhattacharya, 1979 and Miller and Rock, 1985). Myers and Majluf (1984) predict that firms with more investment opportunities will pay lower dividends due to the competition for funds.

4.3.4 Debt

Increases in firm profitability should result in a lower demand for debt from the increased availability of internal funds (Myers and Majluf, 1984). As growth opportunities increase, debt levels decrease because growth projects are financed with equity to avoid the costs associated with underinvestment (Myers, 1977 and Long and Malitz, 1985). Alternatively, the signaling model of Ross (1977) predicts that growth firms with high levels of asymmetric information will increase leverage ratios to mitigate the informational asymmetries.

Contracting theory predicts that growth firms will have lower collateralized assets ratios. The increased volatility of cash flows in growth firms increases the volatility of tax liabilities and provides the impetus to decrease debt levels (Smith and

Stulz, 1985 and Smith and Watts, 1992). The secured debt hypothesis (Scott, 1977) and the tax shield hypothesis (DeAngelo and Masulis, 1980) predict that capital intensive industries with high collateralized asset values and debt are positively related.

4.4 DATA, POLICY VARIABLES AND METHOD OF ANALYSIS

In general, previous studies have found that compensation policy is a function of executive incentive packages, firm size, firm profitability and the firm's growth opportunities. Dividend policy is influenced by firm profitability, the firm's growth potential and a firm's investment opportunities. A firm's capital structure policy is determined by a firm's profitability, growth opportunities and collateralized asset ratio.

4.4.1 Data Sources

Executive compensation data analyzed in the study is drawn from *Business Week's* annual surveys of executive compensation for the years 1984-1991. Although other surveys of compensation are available (*Forbes*, The Compensation Board), the data from *Business Week* provide the largest and most consistent sample. All other variables are from the *Compustat Annual Industrial and Over-the Counter Files*. These variables include total inventories, total assets, gross property, plant and equipment, property, plant and equipment expenditures, total long-term debt, net sales, common stock dividends, research and development expense, the number of corporation employees, operating income before depreciation and common shares reserved for conversion--stock options. Both compensation data and Compustat variables must be available for the observation to be included in the sample. The final sample resulting

from the pooling of cross sectional and time series data consists of 2149 company year observations from 423 companies in 51 industries.

The following sections describe the measures of policy and explanatory variables used in the study. Empirical methods utilized in the analysis are then presented. A discussion of hypotheses and empirical results is found in subsequent sections.

4.4.2 Policy Variables

Executive salary and bonus serve as a proxy for managerial compensation (COMP). Lewellen and Huntsman, 1970 show that this measure is an adequate approximation of total compensation. However, since this measure excludes compensation received from incentive plans, a potential error is introduced. If incentive payments are a major component of total salary over the sample period, the use of this proxy will decrease the probability of finding a significant relation between compensation and other policy variables due to a smaller variation in measured compensation levels.

Dividend yield (DIVS) is defined as dividends per share divided by the closing price of the stock for that year. Although alternate measures of dividend policy appear in some studies (dividends divided by operating income or net income), dividend yield is commonly used to avoid differences across firms in accounting for earnings.

A firm's capital structure is proxied by the firm's leverage ratio (LEV). The leverage ratio is defined as long-term debt divided by total assets. This proxy for capital structure is also used by JS&Z and Mehran (1992).

4.4.3 Explanatory Variables

Because the explanatory variables incorporated in the analysis are measures of firm financial variables, the factors are not completely exogenous. The examination requires two assumptions; that explanatory variables that are not completely exogenous are predetermined and that each firm strategically selects operational levels to minimize agency costs and tax liabilities or to achieve other objectives.

The proxy for executive incentive contracts (OPTIONS) is common shares reserved for conversion (stock options). Incentive contracts are an integral part of the compensation package determination process (Elton and Rosen, 1983, Lewellen, Loderer and Martin, 1987 and Lambert, Larcker and Verrecchia, 1991). Contracting theory predicts a significant correlation between executive salaries and incentive plans (S&W).

The surrogate measure of firm size is total assets (ASSETS). Production and organization economies of scale determine firm size. As firm size increases, managerial responsibilities increase and hence compensation levels should increase. Earlier studies show that compensation levels are a function of firm size (McGuire, Chiu and Elbing, 1962 and Ciscel, 1974).

The proxy for firm profitability (ROA) is operating income before depreciation divided by total assets (DeFusco, Zorn and Johnson, 1991 and JS&Z). Firm profitability affects compensation levels (Lewellen and Huntsman, 1970, Murphy, 1985 and others), dividend policy (Lintner, 1956, Rozeff, 1982 and Miller and Rock, 1985) and capital structure (Myers and Majluf, 1984).

The firm's growth rate (GROWTH) is defined as the rate of increase in corporation employment. An alternate measure, research and development expense as a percentage of sales, was also used to proxy for growth; results were consistent using either measure. Executive compensation levels in growth firms and non-growth firms differ substantially (S&W and Gaver and Gaver, 1993). Dividend policy and capital structure are also affected by growth potential (Rozeff, 1982 and Myers, 1977).

The proxy for the collateralized value of assets (COLLAT) is inventories and property, plant and equipment divided by total assets (Mehran, 1992). Compensation levels and capital structure are a function of the collateralized value of assets (S&W, Scott, 1977 and Myers and Majluf, 1984).

The level of investment (INVEST) is proxied by the sum of expenditures for plant, property and equipment and research and development expense divided by total assets. Investment opportunities are more numerous in growth firms (S&W). JS&Z use the same measure as their proxy for investment opportunities. Investment opportunities affect dividend policy because the two alternative uses for funds compete for available cash flows (Myers and Majluf, 1984).

4.4.4 Empirical Methods

All firms are a function of internal operating choices and external factors affecting profitability. If operation were constant across firms, this analysis would be reduced to an examination of compensation, dividend and debt levels in each firm and identification of the systematic tradeoffs between the policies. Differences in size, profitability and other firm specific variables dictate a more detailed analysis.

S&W show that compensation, dividend policy and financial policy are related to and are partially driven by a firm's investment opportunities. Contracting costs best explain the policies but information costs and taxes also influence the policy choices. This study builds upon and extends the S&W work in two ways. First, firm level data rather than industry level data is used here. Second, previous theoretical modeling and empirical results imply that compensation, dividend and debt policy choices are not only the product of firm specific characteristics but are interrelated. S&W look at the net effects of these factors on policy choices but do not analyze the interaction between policy choices. These interactions motivate the determination of whether these choice decisions are made simultaneously. Theory predicts that the costs ensuing from informational asymmetries and agency costs resulting from the separation of corporate management and corporation owners are minimized by the joint optimization of compensation, dividend and debt policies.

The first step in the examination of the interrelations between compensation, dividend and debt policies is a cross-sectional analysis of the policy variables and the explanatory variables found by previous work to influence policy choice. Correlation coefficients are determined for the variables. No directions of causality can be determined from the correlation coefficient analysis.

The proper structuring of executive compensation contracts, dividend policy and capital structure are all theorized to decrease asymmetric information and agency costs arising from manager and owner separation. These policies are not without costs; the structuring of compensation packages to ensure proper managerial activities is difficult.

Dividends will only reduce informational asymmetries if the signal is costly and cannot be imitated. Increased levels of leverage reduce the levels of free cash flows but at the same time increase bondholder and shareholder conflicts.

The three policy choices can occur independently and still be a function of the same firm characteristics. Single equation estimation is incapable of showing any potential simultaneity but the concurrent choice of policies can be examined using a system of equations. The next step in this analysis examines the interaction of executive compensation, dividend policy and capital structure variables while controlling for both internal operating choices and external economic factors.

An equation system with one equation for each of the policy decisions is analyzed using 3SLS estimation. All of the structural equations are estimated as a set rather than each equation being estimated individually. The equations are first estimated using the two stage least squares technique and these estimates are used to estimate the structural equations' errors and contemporaneous variance-covariance matrix. Generalized least squares estimation is then applied to estimate the large equation system. 3SLS is a consistent estimator and has the advantage of being more efficient than other least squares methods.

The structural equations system to be estimated is:

$$\text{COMP} = \text{CO}(\text{DIVS}, \text{LEV}, \text{OPTIONS}, \text{ASSETS}, \text{ROA}, \text{GROWTH}, \text{COLLAT})$$

$$\text{DIVS} = \text{DI}(\text{COMP}, \text{LEV}, \text{ROA}, \text{GROWTH}, \text{INVEST})$$

$$\text{LEV} = \text{LE}(\text{COMP}, \text{DIVS}, \text{ROA}, \text{GROWTH}, \text{COLLAT})$$

Incentive contracts, return on assets, firm growth, assets, the ratio of collateralized assets and investment opportunities are the exogenous variables included in the system.

The simultaneous determination of the policy choice variables fails to explain why changes are made in the policies. A residual analysis is conducted to determine if direction of causality between executive compensation and dividend policy changes can be determined. The two equations are estimated independently using OLS regression and the residuals are calculated using the estimated coefficients. The equations used in the estimation are:

$$COMP = CO(LEV, OPTIONS, ASSETS, ROA, GROWTH, COLLAT)$$

$$DIVS = DI(LEV, ROA, GROWTH, INVEST)$$

The residuals calculated represent "orthogonalized compensation" and "orthogonalized dividend yields". Any correlation between the variables is indicative of linkages not related to the explanatory variables. If executives increase dividends as "hush money" to conceal their own increases in compensation, the residuals should be positively correlated. A negative relation would result from unusually high dividends being associated with low compensation (altruistic executives) or unusually low dividends being associated with unusually high compensation (self-interested managers). This correlation is consistent with the shareholder and manager conflicts of interest that agency and contracting theory are based upon.

The equations are estimated two additional times, first with dividend yield lagged one period and a second time with compensation lagged one period. Analysis

of these residuals allows examination of possible sequencing behavior as an indicator of any direction of causality.

4.4.4 Diagnostic Tests

To determine if the error variance is affected by any of the regressors, the White (1980) specification test is used to check for heteroskedasticity in the errors. The results show that heteroskedasticity is not a significant problem. Variance inflation factors are calculated to determine if serious multicollinearity exists between the independent variables. These statistics show no significant multicollinearity.

4.5 EMPIRICAL RESULTS

4.5.1 Summary Statistics

Summary statistics of each of the policy variables and explanatory variables are shown in Table 4.5. The hypothesis that the mean of the profitability and growth variables are each equal to zero is rejected at a 1 percent level of significance. Executive compensation averaged almost 1.1 million dollars over the sample period while the mean dividend yield was 4.98 percent. The leverage ratio (defined as long-term debt divided by assets) of 18 percent is similar to the ratio found by Mehran (1992).

For the sample period, the mean number of common shares reserved for option conversion was in excess of 11,000 shares. Firms averaged an over 14.6 percent return on assets and the average annual growth rate exceeded 3.6 percent for the sample period. The mean investment expenditure was 9.2 percent of total assets.

4.5.2 Variable Correlation Coefficients

Pearson's correlation coefficients provide an additional descriptive measure of the primary degree of linear association. As shown in Table 4.6, the negative correlation between executive compensation and dividends and debt is consistent with the prediction of contracting theory and fails to support the hypothesis that dividends are used contemporaneously to lessen shareholder anxieties. The positive compensation and stock option correlation also supports the contracting hypothesis. Compensation levels are positively correlated with both firm size and profitability. The growth variable is positively correlated with compensation and negatively correlated with dividends and leverage as predicted by contracting theory. The collateralized value of assets ratio and investment opportunities are also inversely related to compensation.

Dividend and debt levels are positively correlated--consistent with contracting theory but inconsistent with the alternate financing argument of JS&Z. Firm size and profitability are also positively correlated with dividend payment levels. Dividend levels and the growth and investment opportunity variable are negative as predicted by contracting theory.

As expected, the sign on the debt and profitability correlation coefficient is negative as predicted due to an decreased need for external financing by more profitable firms; however, the coefficient is not statistically significant. In addition, growth opportunities are financed with equity rather than debt resulting in a negative correlation between debt and growth. Asset levels and debt levels are also positively correlated supporting the contracting and tax shield hypotheses. Finally, consistent with the

TABLE 4.5
SUMMARY STATISTICS OF COMPENSATION, FINANCIAL
AND CAPITAL STRUCTURE VARIABLES¹

	COMP	DIVS	LEV ²	OPTIONS	ASSETS
Mean	1093.053	4.984	18.178	11.180	15128.290
Std. Dev.	962.446	5.545	13.528	48.563	25590.820
T:Mean=0	52.819**	41.735**	62.294**	10.707**	27.405**
Maximum	15424.000	144.928	110.666	1273.359	230643.000
75 % (Q3)	1256.000	6.237	27.329	6.760	14841.000
Median	934.000	3.940	16.620	3.313	5861.133
25 % (Q1)	678.000	2.295	6.498	0.251	2557.818
Minimum	216.000	0.000	0.000	0.000	210.660
	ROA ³	GROWTH ⁴	COLLAT ⁵	INVEST ⁶	
Mean	14.624	3.658	74.290	9.242	
Std. Dev.	8.878	17.718	41.590	6.827	
T:Mean=0	75.794**	9.275**	82.806**	62.749**	
Maximum	71.123	18.369	191.185	53.851	
75 % (Q3)	19.773	6.292	108.140	13.200	
Median	14.828	1.025	78.646	8.686	
25 % (Q1)	10.016	-2.667	50.452	4.294	
Minimum	-8.204	-7.381	0.000	0.000	

¹ 2149 Observations

² LEV = Long-Term Debt/Assets x 100

³ ROA = Operating Income/Assets x 100

⁴ GROWTH = Growth Rate of Corporation Employment

⁵ COLLAT = (Inventory + Property, Plant and Equipment)/Assets x 100

⁶ INVEST = (Property, Plant and Equipment Expenditures + Research and Development)/Assets x 100

* Significant at the 5 % level

** Significant at the 1 % level

secured debt hypothesis, debt levels are positively correlated with the collateral value of assets.

The variables used in this analysis are patently non-normal. An alternate measure of correlation, Kendall's rank-order correlation coefficients, is a non-parametric test that does not assume that the data is distributed normally. These

correlation coefficients are calculated to ensure that the results are not being driven by the lack of normality. The Kendall correlations are consistent with the Pearson coefficients.

4.5.3 Three Stage Least Squares Estimation

Table 4.7 displays the results of the 3SLS estimation of the system of equations. The results are largely supportive of contracting theory. In the compensation structural equation, the estimates of the dividend and capital structure coefficients are negative and differ significantly from zero. These results are consistent with contracting theory and signaling theory predictions but do not support the hypothesis that dividends are used to reduce investor anxieties. The stock option, firm size and profitability coefficient estimates are all positive and significant. The growth coefficient estimate is positive as predicted and differs significantly from zero. The collateralized asset value estimate is negative and significant.

In the second structural equation, the estimate of the compensation coefficient is negative and significant and the leverage ratio estimate is positive and significant as predicted by contracting theory. The estimate of the growth coefficient is also negative and significant, also supporting contracting theory. The investment variable coefficient is negative and significant. The profitability variable coefficient does not differ significantly from zero.

The compensation variable coefficient is negative and significant and the dividend variable coefficient is positive and significant in the third structural equation. The estimates of the coefficients representing firm profitability and growth are both

TABLE 4.6

CORRELATION COEFFICIENTS AMONG COMPENSATION, FINANCIAL AND CAPITAL STRUCTURE VARIABLES
(1984-1991)

VARIABLES	1	2	3	4	5	6	7	8	9
1 COMP	1.00								
2 DIVS	-0.069**	1.00							
3 LEV	-0.100**	0.108**	1.00						
4 OPTIONS	0.082**	-0.040	-0.028	1.00					
5 ASSETS	0.174**	0.096**	0.099**	0.089**	1.00				
6 ROA	0.065**	0.053*	-0.012	0.033	-0.485**	1.00			
7 GROWTH	0.113**	-0.128**	-0.051*	0.028	-0.032	0.165**	1.00		
8 COLLAT	-0.144**	0.115**	0.422**	-0.080**	-0.394**	0.156**	0.033	1.00	
9 INVEST	-0.088**	-0.069**	0.061**	-0.007	-0.346**	0.206**	0.556**	0.523**	1.00

* Significant at the 5% level

** Significant at the 1% level

negative and significant. These results support the theory that more profitable firms and firms with more growth opportunities have less debt. The collateralized asset ratio variable coefficient is positive and significant as expected.

The 3SLS estimates for the compensation, dividends and debt coefficients all differ significantly from zero. These findings imply that the three policy variables are jointly and simultaneously determined.

4.5.4 Residual Correlation Analysis

In the previous section, executive compensation, dividend and capital structure policies are shown to be simultaneously determined. The finding of a concurrent determination process fails to explain why changes are made in the policies. The data are reexamined to determine if directions of causality can be determined.

Although no serious multicollinearity exists, the correlation coefficients between the variables are significant. The altered structural equations I and II from the 3SLS analysis are estimated using compensation and dividend variables orthogonalized to the explanatory variables of the equations. This type of analysis biases the examination--no significant results are expected. This type of analysis also facilitates the determination of potential lag relations between the variables.

The orthogonalized executive compensation and dividend yield correlation coefficient is -0.0575 (p-value = 0.0104). Compensation and dividend yield are negatively correlated after controlling for leverage, firm size, growth and other explanatory variables. This negative relationship is consistent with the results from 3SLS estimation and supports contracting theory. The correlation coefficient

TABLE 4.7

THREE STAGE LEAST SQUARES ESTIMATES¹ OF FINANCIAL AND
CAPITAL STRUCTURE VARIABLES ON EXECUTIVE COMPENSATION
DIVIDENDS AND CAPITAL STRUCTURE²

(1984-1991)

COEFFICIENT	ESTIMATE	STANDARD ERROR	t-VALUE (H ₀ :ESTIMATE=0)	P > t
Structural Equation I				
Dependent Variable = COMP				
INTERCEPT	891.857	76.190	11.706	0.0001
DIVS	-16.727	3.908	-4.280	0.0001
LEV	-4.659	1.854	-2.513	0.0085
OPTIONS	0.947	0.429	2.204	0.0276
ASSETS	0.009	0.001	8.139	0.0001
ROA	24.068	3.123	7.708	0.0001
GROWTH	3.875	1.225	3.163	0.0016
COLLAT	-3.027	0.703	-4.305	0.0001
Structural Equation II				
Dependent Variable = DIVS				
INTERCEPT	4.409	0.362	13.562	0.0001
COMP	-0.001	0.000	-3.982	0.0001
LEV	0.072	0.009	7.737	0.0001
ROA	0.018	0.016	1.113	0.2658
GROWTH	-0.028	0.007	-4.016	0.0001
INVEST	-0.091	0.021	-4.256	0.0001
Structural Equation III				
Dependent Variable = LEV				
INTERCEPT	10.737	0.758	14.149	0.0001
COMP	-0.001	0.000	-2.900	0.0036
DIVS	0.283	0.047	6.042	0.0001
ROA	-0.463	0.033	-13.782	0.0001
GROWTH	-0.043	0.015	-2.870	0.0041
COLLAT	0.176	0.007	23.885	0.0001

¹ System Weight R-Square = 0.177² 2149 Observations

of compensation and lagged dividend yield is -0.0433 ($p\text{-value} = 0.0835$). Compensation levels are also negatively correlated with the previous period's dividend yield. The lagged compensation and dividend correlation is negative but does not differ significantly from zero.

The negative lagged dividend yield and compensation correlation could be due to changes in the dividend payout amount or changes in the stock price. The correlation coefficients are again estimated after redefining the dividend variable as total dividends paid by the firm and scaling both compensation and dividends by firm assets. The executive compensation and dividend correlation is -0.0731 ($p\text{-value} = 0.0015$) and the compensation and lagged dividend correlation is -0.0552 ($p\text{-value} = 0.0205$). The lagged compensation and dividend correlation is not significant.

4.6 SUMMARY AND CONCLUSIONS

The results of this analysis are largely supportive of the contracting theory and support the findings of Smith and Watts (1992). The 3SLS estimates of the policy choice variables executive compensation, dividend policy and capital structure all differ significantly from zero and the signs are consistent with theory predictions. Executive compensation levels are negatively correlated with dividend and debt levels. These results are not consistent with the prediction that dividends are used to pacify investors and decrease anxieties arising from the separation of management and ownership. Alternatively, dividends can be used to decrease investor anxieties but executive compensation levels are not a source of anxiety. Dividend and debt levels are positive and significant, consistent with contracting and signaling theory predictions but

inconsistent with the tradeoff theory of JS&Z. The significance of the policy variables in all three structural equations infers that compensation, dividend and debt policies are jointly determined.

CHAPTER 5

SUMMARY, CONCLUSIONS AND FUTURE RESEARCH

"Corporate dividend policy remains a topic on which the field has failed to arrive at even a local sense of closure" (Marsh and Merton, 1987). Despite ardent theoretical and empirical analysis, financial economists are unable to explain the tenacity of the phenomenon. The purpose of this dissertation has been to examine the historical evolution of corporate dividend policy, to review the theoretical modeling of dividend policy by financial economists and the empirical tests of those theories and to examine the interaction between executive compensation, dividend policy and capital structure.

Dividend payments began as total distributions of all funds after each sailing venture of the joint stock trading companies of the seventeenth and eighteenth centuries. All profits and invested capital were distributed to shareholders on a pro rata basis and the enterprise was dissolved. These disbursements were soon limited to profit distributions when shareholders and managers found it more expedient to maintain the corporation as a going concern. Stockholders received their share of the net profits of the voyage based on their original investment, the ships were refitted and resupplied and dispatched on another expedition. The distributions later evolved into symbolic liquidations made up of both profits and retained earnings when managers realized that internal funds provided the least expensive source of capital for expansion of the

company. Dividend levels are the result of a process that considers profit levels, investment opportunities, past payment history and other financial information.

Several recurring themes appear consistently throughout the historical evolution of dividend policy. The importance of maintaining a stable or increasing dividend payment once payments are begun is paramount in the financial policy decisions of the corporation. Managers have used substantial dividends to lessen the shareholder anxieties arising from the separation of corporate management and owners. Less than ethical managers often resorted to fraudulent activities to maintain payment levels. In addition, the determination of dividend payments is a major policy choice rather than a residual decision. Finally, shareholders equate consistent and substantial dividend payments with firm value. Dividend payments have been the primary input for firm valuation by investors over the past three centuries.

The Miller and Modigliani (1961) (M&M) irrelevance declaration is the genesis of the modern era of theoretical modeling efforts. In perfect markets, dividend policy is irrelevant--corporations lack the incentive to follow a systematic policy. Empirical attempts are unable to conclusively support or reject the irrelevance theory. The next body of research models dividend policy adds the market imperfection of taxes to the equilibrium. The significance of the effect of taxes on dividend policy is not questioned--models are either based on the tax adjustment hypothesis (dividends are grossed up to offset the tax liabilities of payments) or tax avoidance hypothesis (dividend income is sheltered from tax liabilities). The majority of empirical work better supports the tax adjustment hypothesis but the literature fails to explain the large

number of dividend paying corporations or the relative rarity of non-dividend paying stocks.

Market imperfections arising from the separation of the corporation's managers and owners and the resulting informational asymmetries are the cornerstone for three distinct attempts to explain dividend policy. The need to relay information to shareholders that is known exclusively by managers is the basis of dividend signaling models. The information content of dividends hypothesis (M&M) posits that unexpected changes in dividend policy can relay information to shareholders. A number of theoretical models using dividends as signals have been developed. The informational content of dividend hypothesis is supported by the majority of empirical analyses; the only test of a theoretical signaling model fails to support the model. The second theoretical model resulting from informational asymmetries is based on the agency costs arising from the separation of owners and managers (Berle and Means, 1932 and Jensen and Meckling, 1976). The priorities and goals of managers often diverge from activities that are in the best interests of shareholders (Kaysen, 1960 and Gordon, 1961). Dividends lower these costs by reducing the cash available for managerial improprieties and increasing the monitoring of managerial efforts by capital markets (Easterbrook, 1984). The free cash flow hypothesis (Jensen, 1986), the third theoretical model, combines the signaling and agency cost models. Empirical tests generally support these theories.

The influence of societal norms (Shiller, 1984) and corporate traditions (Lintner, 1956 and Frankfurter and Lane, 1991) on dividend policy and the use of dividends to

decrease investor anxieties resulting from the separation of corporate ownership and management (Frankfurter and Lane, 1991) are the underpinnings for behavioral modeling efforts. Dividend policy is an active decision variable and dividends are changed only when managers are confident of the permanence of the higher levels of earnings. Dividend payment tradition is an important input in the dividend decision (Lintner, 1956, Baker, Farrelly and Edelman, 1985 and Baker and Farrelly, 1988).

Differences in method of analysis, data type and sample period are commonly cited reasons for the conflicting results obtained in empirical analyses of theoretical dividend models. An empirical analysis of the tests of dividend theory shows that none of these factors have any significant explanatory power in the results of the analysis. Rather than the conflicting results being attributable to a factor commonly cited as the element responsible for the discrepancy, the analysis implies that the paradigm is incomplete in its modeling of corporate dividend policy.

Research investigating the determinants of executive compensation, dividend policy and capital structure policy decisions have primarily relied on single equation models to determine the significance of individual firm characteristics on these policy choices. This analysis uses a system of equations and finds that compensation, dividend and debt policy decision are made concurrently. The associations between the policy variables and the variables representing firm specific characteristics are for the most part consistent with contracting theory and signaling theory predictions.

The payment of dividends to shareholders has been a corporate tradition for over three centuries; dividend payment policy remains a significant financial policy decision.

Despite the importance of this tradition, financial economists have largely neglected this influence in the development of the theoretical dividend policy paradigm. Although difficult to model, the incorporation of this corporate tradition into theoretical modeling efforts could open new avenues for the unraveling of the dividend puzzle.

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APPENDIX A

METHOD OF ANALYSIS ABBREVIATIONS

A. Abnormal Return Methods of Analysis

AARA	Average Adjusted Returns Analysis
ES	Event Study Method of Analysis (Fama and Babiak, 1968, Fama, Fisher, Jensen and Roll, 1969, Fama, 1976, Aharony and Swary, 1980, Brown and Warner, 1980, Masulis, 1980 and Brown and Warner, 1985)

B. Price Change Methods of Analysis

Class _A /Class _B Ratio	Price ratio between two classes of common stock
EG	Elton and Gruber (1970) Method
Modified EG	Modified Elton and Gruber (1970) Method
Option Price Changes	Changes in Option Prices
Price _A /Price _B Ratio	Price ratio between two issues

C. Regression Analysis Methods of Analysis

ALS	Augmented Least Squares
IV	Instrumental Variables
LOGIT	Logit Analysis
MRA	Multiple Regression Analysis
OLS	Ordinary Least Squares Analysis
RCRA	Random Coefficient Regression Analysis (Swamy, 1970, 1971 and 1974)
RRA	Recursive Regression Analysis
SUR	Seemingly Unrelated Regressions (Zellner, 1962)
TSRA	Time Series Regression Analysis
2SLS	Two Stage Least Square Analysis
3SLS	Three Stage Least Squares Analysis
TOBIT	Tobit Analysis
XSRA	Cross Sectional Regression Analysis

APPENDIX A (continued)**METHOD OF ANALYSIS ABBREVIATIONS****D. Other Methods of analysis**

ANOVA RBD	Analysis of Variance Randomized Block Design
BJM	Box Jenkins Method
Corr Coeff	Correlation Coefficient Method
CSA	Cross Spectral Analysis
DA	Aggregate Data Analysis
GC Test	Granger Causality Test (Granger, 1969)
Means Test	Means Test
NP Tests	Non-Parametric Tests (Wilcoxin Signed Rank Test, Spearman Rank Correlation Coefficients)
VAR	Vector Auto-Regression (Sims, 1980)

APPENDIX B

CATEGORICAL VARIABLE ANALYSIS METHOD OF ANALYSIS

CDAM is a multivariate method of analysis that was originally developed around the turn of the century (Fienberg, 1978). The technique utilizes a multidimensional contingency table to cross classify data into categories. Each category count represents the frequency of a unique combination of categorical variables in the sample. The population variable-level combination probability is estimated using iterative WLS using the observed frequency (Fingleton, 1984). Iterative WLS improves WLS estimates by first estimating the weights, fitting the regression function and calculating the residuals using WLS. The residuals from the first estimation are then used to re-estimate the weights and the regression is refitted. The process continues until no significant changes occur in the weights.

The explanatory variables used in the analysis are assumed to represent true categorical variables and not a blend of variables and not combinations of explanatory variables. Each of the variables used in the analysis are independent categorical variables. In addition, explanatory variables are assumed to be fixed and play a defining role in the study and can be continuous or discrete. The method also assumes that explanatory variables are mutually independent--the knowledge of one of the independent categorical variables does not ensure correct prediction of another explanatory variable. CDAM further assumes that the table frequencies follow a

product multinomial distribution (Fingleton, 1984). The product multinomial distribution requires that each observation in the sample be classified based on its unique combination of explanatory variables.

CDAM and ANOVA are similar methods of analysis. Both CDAM and ANOVA estimate the interaction between variables. The methods differ in that ANOVA models estimate the effects of the independent variables on the dependent variable and partition the overall variability of the model. In contrast, CDAM estimates the structural relation between the variables by estimating the parameters and testing hypotheses about linear combinations of these parameters. The null hypothesis is formulated so as to test the fit of the model. The test statistics calculated are generalized Wald (1943) statistics that approximate an asymptotic χ^2 distribution.

The multidimensional contingency table displays cross classified counts based on each of several sets of categories and facilitates CDAM (Fienberg, 1980). The table rows represent samples determined by unique combinations of independent variables while the table columns are determined by dependent variable response. The count in the (i,j) th cell is the quantity of individuals in the i th population that have the j th response. The sample proportion, $p_{ij} = n_{ij}/n_j$ estimates the probability of the j th response (π_{ij}). The proportion vector \mathbf{p} is converted into a function vector $\mathbf{F} = \mathbf{F}(\mathbf{p})$. If the true probabilities for the entire table is represented by the vector $\boldsymbol{\pi}$, the functions of the probabilities $\mathbf{F}(\boldsymbol{\pi})$ follow the linear model

$$\mathbf{E}_A(\mathbf{F}) = \mathbf{F}(\boldsymbol{\pi}) = \mathbf{X}\boldsymbol{\beta}$$

where E_A indicates the asymptotic expectation, X is the fixed constant design matrix and β is the parameter vector that is estimated.

The WLS estimation method is utilized to estimate the structural relation between the variables. The weights are determined from the inverse covariance matrix of the $F(p)$ functions of F and b (β estimate) and the weighted residual sum of squares is minimized. If S is defined as the estimated covariance matrix of F , the fit of the model is determined using the test statistic

$$F'S^{-1}F - b'(X'S^{-1}X)b$$

which is asymptotically distributed χ^2 . The goodness of fit of the model is tested with the null hypothesis

$$H_0 = C\beta = 0$$

where C is a matrix of arbitrary constants. The test statistic for this hypothesis

$$b'C'[C(X'S^{-1}X)^{-1}C']^{-1}Cb$$

follows an asymptotically χ^2 distribution if H_0 is true. Although the maximum likelihood estimation method of CDAM has a smaller variance, WLS regression CDAM is less complex and the difference in variance is not significant (Grizzle, Starmer and Koch, 1969).

APPENDIX C

CATEGORICAL VARIABLE ANALYSIS METHOD OF ANALYSIS RESULTS

The following tables show the results of CDAM analysis of the empirical analyses of corporate dividend policy. In Table C1, methods of analysis are partitioned into four groups; abnormal return, price change, regression analysis and other methods. Table C2 shows the results from dividing data type into studies using annual, quarterly, monthly and daily data. The results from the analysis of the study's midpoint as the only explanatory variable are shown in Table C3 while Table C4 shows the results from analysis with the publication outlet as the only variable. None of the variables are significant in the analyses.

TABLE C1

ANALYSIS OF WEIGHTED LEAST SQUARES ESTIMATES
OBTAINED FROM CATEGORICAL VARIABLE ANALYSIS OF
EMPIRICAL ANALYSES OF CORPORATE DIVIDEND POLICY¹

EXPLANATORY VARIABLE: METHOD OF ANALYSIS

VARIABLE	ESTIMATE	STANDARD ERROR	CHI SQUARE ²	PROBABILITY (P=VALUE)
Intercept	0.2036	0.0372	29.97	0.0001
Price Change	-0.0640	0.0527	1.48	0.2244
Regression Analysis	0.0964	0.0814	1.40	0.2365
Other	0.0536	0.0524	1.04	0.3068

¹ The empirical analyses evaluated are obtained from Tables 3.1-3.8.

² N = 155 in this analysis.

TABLE C2

ANALYSIS OF WEIGHTED LEAST SQUARES ESTIMATES
OBTAINED FROM CATEGORICAL VARIABLE ANALYSIS OF
EMPIRICAL ANALYSES OF CORPORATE DIVIDEND POLICY¹

EXPLANATORY VARIABLE: DATA TYPE

VARIABLE	ESTIMATE	STANDARD ERROR	CHI SQUARE ²	PROBABILITY (P=VALUE)
Intercept	0.2160	0.0396	29.80	0.0001
Quarterly	0.0567	0.0676	0.70	0.4013
Monthly	-0.0285	0.0502	0.32	0.5702
Daily	0.0449	0.0759	0.35	0.5542

¹ The empirical analyses evaluated are obtained from Tables 3.1-3.8.

² N = 155 in this analysis.

TABLE C3

ANALYSIS OF WEIGHTED LEAST SQUARES ESTIMATES
OBTAINED FROM CATEGORICAL VARIABLE ANALYSIS OF
EMPIRICAL ANALYSES OF CORPORATE DIVIDEND POLICY¹

EXPLANATORY VARIABLE: STUDY MIDPOINT

VARIABLE	ESTIMATE	STANDARD ERROR	CHI SQUARE ²	PROBABILITY (P=VALUE)
Intercept	0.2169	0.0330	41.26	0.0001
Late ³	0.0440	0.0330	1.70	0.1923

¹ The empirical analyses evaluated are obtained from Tables 3.1-3.8.

² N = 155 in this analysis.

³ Late studies are those with sample period midpoints of 1975 and later.

TABLE C4

ANALYSIS OF WEIGHTED LEAST SQUARES ESTIMATES
OBTAINED FROM CATEGORICAL VARIABLE ANALYSIS OF
EMPIRICAL ANALYSES OF CORPORATE DIVIDEND POLICY¹

EXPLANATORY VARIABLE: PUBLICATION OUTLET

VARIABLE	ESTIMATE	STANDARD ERROR	CHI SQUARE ²	PROBABILITY (P=VALUE)
Intercept	0.2400	0.0340	47.37	0.0001
Other ³	0.0032	0.0340	0.01	0.9269

¹ The empirical analyses evaluated are obtained from Tables 3.1-3.8.

² N = 155 in this analysis.

³ Other publications are all studies not appearing in *The Journal of Finance*, *Journal of Financial and Quantitative Analysis*, *Journal of Financial Economics* and *The Review of Financial Studies*.

VITA

A native of Northeast Arkansas, Bob G. Wood, Jr. received both his Bachelor of Science (1978) and Master of Business Administration (1990) from Arkansas State University. While at Arkansas State, Mr. Wood was named outstanding MBA Student (1990) and was chosen for membership in Beta Gamma Sigma and Phi Kappa Phi. He was selected as a Board of Regents Fellow at Louisiana State University. His areas of interest include dividend policy, international finance and executive compensation. Mr. Wood is currently a member of the Arkansas State University College of Business Faculty.


DOCTORAL EXAMINATION AND DISSERTATION REPORT

Candidate: Bob G. Wood, Jr.

Major Field: Business Administration (Finance)

Title of Dissertation: The Evolution of Dividend Policy in the Corporation and in Academic Theory

Approved:

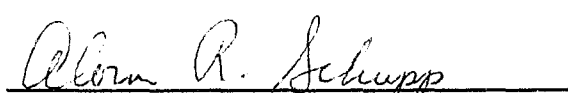
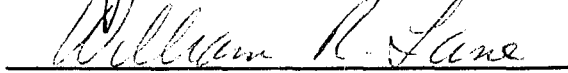
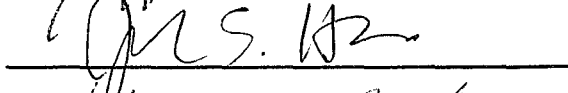
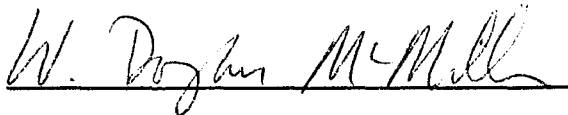


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Date of Examination:

November 12, 1993